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COMMERCIAL CAR JOURNAL

and OPERATION & MAINTENANCE

AUGUST 1929



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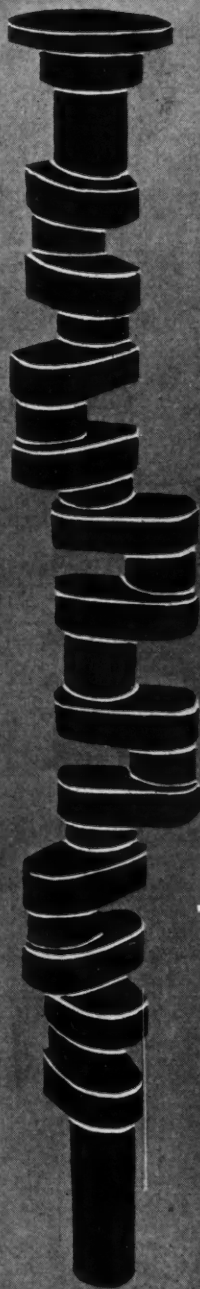
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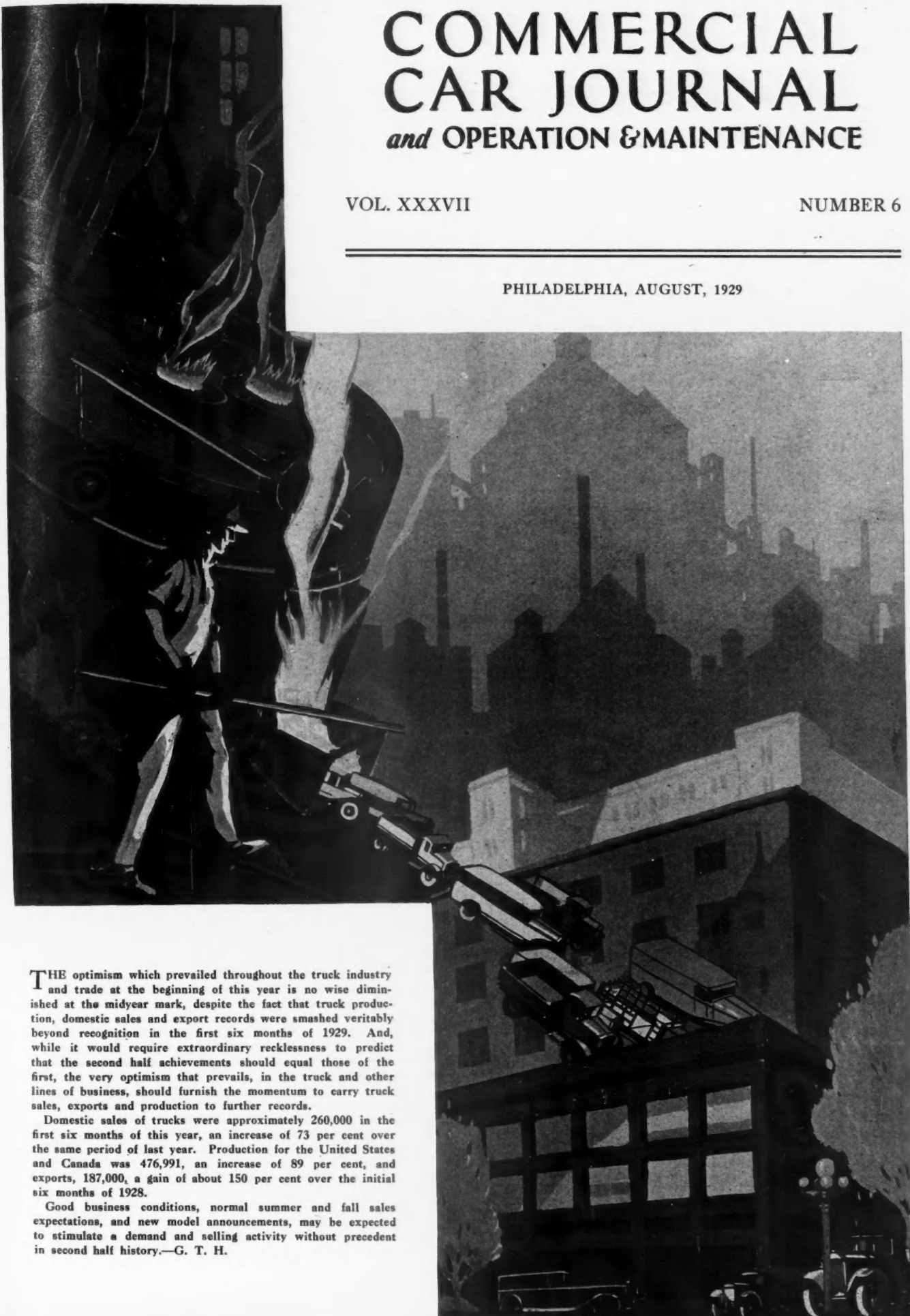
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PHILADELPHIA, AUGUST, 1929



THE optimism which prevailed throughout the truck industry and trade at the beginning of this year is no wise diminished at the midyear mark, despite the fact that truck production, domestic sales and export records were smashed veritably beyond recognition in the first six months of 1929. And, while it would require extraordinary recklessness to predict that the second half achievements should equal those of the first, the very optimism that prevails, in the truck and other lines of business, should furnish the momentum to carry truck sales, exports and production to further records.

Domestic sales of trucks were approximately 260,000 in the first six months of this year, an increase of 73 per cent over the same period of last year. Production for the United States and Canada was 476,991, an increase of 89 per cent, and exports, 187,000, a gain of about 150 per cent over the initial six months of 1928.

Good business conditions, normal summer and fall sales expectations, and new model announcements, may be expected to stimulate a demand and selling activity without precedent in second half history.—G. T. H.

WHEN THE SALE

Should the Salesman Sending an S. O. S. Accompany the Helper?

By George T. Hook

SOME truck sales executives would answer this question with a "yes," others with a "no," and still others would give a "yes-and-no."

The ideal condition naturally would be for every truck salesman to be so good that he would have no occasion to ask for help in closing a sale. The actual condition, as the trade well knows, could hardly be said to approximate the ideal.

To meet the existing condition a symposium of executive opinion such as the following should prove helpful to sales heads in shaping courses of action and to salesmen in appreciating the reasons back of such actions.

AMONG men of the sea and men engaged in selling trucks, S.O.S. is a signal that help is wanted. In the one case, a ship's in danger; in the other, a prospective sale. In either case, there is a prompt response. But there the similarity ceases.

From then on, the sales manager receiving the danger signal can pursue several courses of action. He can buttonhole the salesman seeking succor, diagnose his deficiencies in a heart-to-heart talk, instruct him and tell him to stick to his prospect until he sinks his order in someone else's cash box; he can delegate another salesman to take over the prospect; or he can elect himself or a member of his sales staff to accompany the slipping salesman and give the prospect the "works" in the hope that together they will form a winning combination.

One might suppose that with so many trucks and other automotive vehicles sold annually experience would indicate a standardized procedure. But difference of opinion, it would



appear, not only makes horse races, but also makes truck selling competition what it is today. From contact with the trade it became evident that action following the receipt of an S.O.S. call from a salesman is no more standardized than is truck design.

In order to get the reasons back of these varying opinions, and knowing that a compilation would be of interest throughout the trade, 21 truck executives in 10 key cities of the United States were approached and asked to answer this question: "When a salesman asks aid in closing a sale is it advisable for the salesman to accompany the helper at the interview?" Some said "yes," and gave their reasons; others said "no," and gave their views, and still others said "yes and no," explaining that circumstances, as always, alter cases.

In the opinion of R. W. Leach, vice-president of the Curtis Auto Co., Reo dealer in Milwaukee and Wisconsin distributor, the salesman should always accompany the helper at the interview when he needs assistance in



closing the sale. For the salesman to be absent has the psychological effect of bringing down the morale of a sales force to a point where it is better to lose the sale.

"In the first place," Mr. Leach said, "salesmen on the force should be of such calibre that they do not need assistance in closing the sale. If one should ask for assistance and were not present at the interview, and the manager or some other salesman closed the sale, there would always be doubt in the salesman's mind as to how the sale was made. He might think that the commission was cut, or a better concession made. By having him on the ground he would know just what occurred."

While coinciding in these views, J. T.

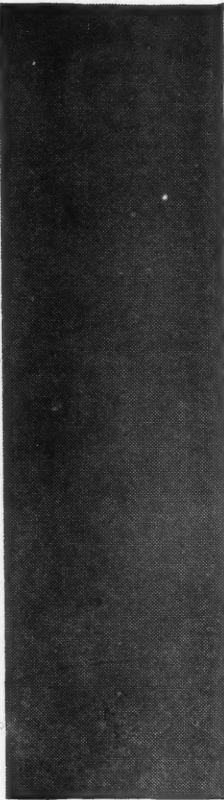
Jenkins, manager of the truck department of the Oakland, Cal., office of the J. E. French Co., Dodge dealer, held out an exception to take care of a situation in which the personality of the first salesman has in some manner become objectionable to the customer. He added also that it is his custom to discourage the practice of sending out shock troops.

"We do not provide for it any more than is absolutely necessary," he said. "There are two strong reasons against such a practice. The first is that every time you send a second salesman you are doubling the cost of the sale. The second is that every time you send along a second salesman you have weakened the first one and have lessened his confidence in himself."

A clash of incompatible personalities is comparatively rare, argued R. A.

Sweet, general manager of the Seattle branch of the General Motors Truck Co., who declared his willingness to take a chance on that score in order to get a first-hand impression of how the salesman works.

"When a sales manager accompanies a salesman on a call, he lets the salesman take the initiative in the interview—to start where he left off on the last call, so to speak," Mr. Sweet explained. "The sales manager takes a hand in the deal when he sees that it is expedient to do so, but not until he has observed the salesman in action.



Wells, Inc., Chevrolet distributor in Seattle, Wash., declared that when the salesman who has been working on the prospect accompanies the sales manager or "closer," it tempers the impression that high-powered salesmanship is about to be used.

"I encourage my men to bring every interview to a definite close," he said. "To let a deal hang fire encourages stalling. But by bringing each interview to a definite close, either an order or a turn-down, the salesman has led his prospect to feel that he has decided the matter, and if the decision is against the salesman and he appears to accept the decision gracefully, the prospect feels a little bit sorry for the salesman. A slight bond of sympathy springs up. It is then a simple matter for the salesman to continue the calls. If the salesman thinks it advantageous to take another man with him, it seems natural for him to proceed somewhat as follows: 'Mr. Smith, our sales manager, Mr. Jones, has some new ideas on the truck proposition that we discussed the other day—phases that I didn't cover. I know you'll be interested, so I brought Mr. Jones to see you.' This approach makes it easy to introduce a new man into the deal without seeming to use strong-arm methods."

"We follow the practice of having the salesman accompany the helper," said H. M. Clark, general manager of the Milam Chevrolet Co., San Antonio, Tex., "because the salesman frequently has the prospect partially sold. In such instances, if the new salesman worked alone it would require probably half a day to develop the sales process to the point where the first salesman left off. If the first salesman is present

has observed it requires only a short time for the new salesman to graft his tactics on to the stock that the first salesman has already pruned out."

Asserting that some situation is bound to come up with which the salesman is familiar and which requires his presence, Paul G. Clark, president, Paul G. Clark, Inc., Chevrolet dealer of Colorado Springs, Colo., declared "two men are always better than one, because when one runs out of ammunition, the other can take up the shooting, and because two men on a prospect instead of one go a long way toward weakening sales resistance."

Frank B. Smith, president, F. B. Smith Chevrolet Co., Youngstown, Ohio, never permits his men to lean on the "closer," but two or three of the stronger salesmen are available for assistance when any member of the force runs up against a customer who is too skittish to put his name on the dotted line. In a case of that kind the helper goes with the salesman, Mr. Smith claiming there is no undesirable reaction on the part of the prospect when two salesmen call on him. The regular salesman then makes another attempt to secure the order, and when he appears to have reached his limit the "closer" takes over the customer and the regular salesman becomes an observer. This system, Mr. Smith believes, has the additional advantage of affording excellent training for salesmen with limited experience who may be lacking in poise, self-confidence and resourcefulness.

E. F. Nygaard, manager of the truck department of the J. M. Oppen Co., Reo dealer in Omaha, Neb., concurred with H. M. Clark in his opinion, and said that if the helper were to go alone it might suggest to the prospect that he had worsted one salesman and here was another for him to practice on and put to flight. Mr. Nygaard has made a ten-year study of salesmanship methods, and it is his opinion that once a salesman gets a fingerhold on a prospect he should be given all the help and encouragement possible, but should never be taken off the job.

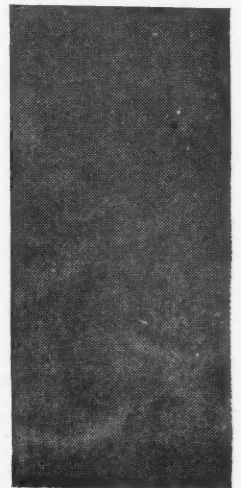
In voicing a negative view of the question, C. C. Morgan, manager of the Mack International Motor Truck Corp. branch in Milwaukee, Wis., said: "There are two types of buyers. One type would be flattered to have the sales manager call on him to close the sale. The other would resent it. I hold that if the salesman cannot close the sale himself, it would be better to lose the sale. A salesman cannot make all of them; there must be some lost sales. If the manager were to go out with every salesman whenever the salesman wants him to, he would have little time for anything else. If the salesman is not of the calibre who does not need assistance in the closing of most of his sales, he is not a good salesman."

Others who believe the salesman asking for aid should not accompany his helper asserted reasons almost directly opposed to the affirmative reasons advanced above.

"When a salesman asks me to help him close a sale, I know he's done and I go alone to close," said P. T. Altman, sales manager of the White Truck Sales Co., of Phoenix, Ariz. "That's the way I've trained my salesmen. I'd as soon try to ride a man double at the opening as at the close. . . . And I don't want too much information from the salesman as to how the deal has been proceeding up to this point; that is, I don't want any gossip about the matter. But I do want definite information, and I ask the salesman to put that information in writing. It varies in many particulars, but I ask the salesman to confine himself to three or four points, and the final one always is 'Why haven't you made the sale?' If he can answer that definitely, I go alone to the prospect and wait for him to show me why he hasn't made the purchase. The point of attack lies somewhere between the salesman's report and the prospect's reaction, and I want a lone hand then to thrash both ways from this point until I have covered the ground. It is my experience that the presence of the original salesman at the interview only leads either him or the customer to fall back on some old ground that they have already covered without effecting the sale, and that is better left out of the argument, unless it is the very point given me by the salesman and the customer. In that case I can cover it; the salesman can do no more, as he has already failed at that point and knows it."

George F. Wroten, of the Wroten-Hundley Motor Co., Dodge dealer of San Antonio, Tex., held that "if the salesman accompanied the helper he could only pour cold water on the entire situation. He has already demonstrated that he has failed in closing, so why have him around to clutter up the selling landscape? Clothing merchants learned the art long ago by making the turnover to the new salesman a seemingly casual matter. Under their plan the first salesman fades quickly out of the picture, leaving the second man to do his stuff undisturbed."

A. W. Marksheffel, president of the Marksheffel Motor Co., Dodge dealer in Colorado Springs, Colo., backed up his negative view with the opinion that "most people resent being two-timed; that is, they don't like to have two men on them. It gives them the helpless feeling which enrages them to the point of queering the sale. There are exceptions to (Turn to page 48, please)"



“APPLY BUSINESS SCIENCE TO TRUCK OPERATION



Nathaniel Mallouf

“The Delivery Department Deserves the Same Supervision and Method of Control Extended to Other Departments of Business.”

Says Nathaniel Mallouf

*President, Mallouf Haulage and Maintenance Company**

BUSINESS science must be applied to motor truck operation so as to coordinate all engineering effort for maximum control and economy. The efficiency of big-business combinations and of large-scale production has reduced manufacturing cost to the minimum, and the outstanding problem now confronting industry is the staggering distribution cost. Only through the reduction of the distribution cost can industry engage profitably in the ever increasing and highly competitive markets.

Taking into consideration the huge investment and the tremendous yearly

*Remarks from paper presented at S. A. E. Saranac meeting.

executives can no longer afford to slight their motor transportation and ignore its potentialities by treating it, as they are doing, in a distant manner.

One of the great factors in speeding up distribution and reducing its costs is the motor truck. Heads of industry have been led to believe that control of motor truck operation is purely a mechanical problem. They admit its importance, but doubt that the results desired can ever be controlled as they have learned to control the other and older departments of their business. But it has been demonstrated in many cases that, when considered from a commercial aspect, motor truck operation can be put on the same easily comprehended and well understood basis, and under the same regular supervision, as can purchasing or accounting or manufacturing or selling, or any other department in which profitable methods of control have been achieved through years of experience.

Subordinating this indispensable transportation service to a position below that of a separate business or department manifestly would be at variance with good business administration. The person responsible for it should report directly to the chief executive and should be granted the same unbiased and impartial considera-

tion as is extended to the heads of other departments. Successful superintendents and operators possess not only technical knowledge but, what is more important, exceptional business ability.

Neither the utmost economy nor the great potentialities of the modern motor truck will ever be realized until motor transportation is fully recognized as a separate and distinct business standing on its own feet and guided by a profit-and-loss statement. Industries should organize their motor transportation departments as subsidiary companies or else purchase transportation service on a contract basis from an independent company of competent business specialists in motor transportation. The definite segregation of costs, by this method, enables the company to obtain information which can be used on a comparative basis in an endeavor to learn the true factors entering into its transportation costs and the relation of one to the other. This method will also place the company in a position in which its own costs can be used against competitive methods of transportation, (Turn to page 60, please)

aggregate cost involved, motor truck operation becomes a major cost of distribution and a most potent factor controlling the margin of profit; therefore, chief

FLEET SERVICE AND

Owner's Equipment No. _____ Route No. _____ Our Temporary No. _____ Our Permanent No. _____	
TRANSPORTATION GUARANTEE CO. 1901 - 17th St., San Francisco	
Data required for estimating charges in Guarantee Service Contract Verify Your Costs	
Owner _____	Date _____
Owner's Representative _____	NOTE: The following is a list of items representing the cost of operating a motor truck. This is submitted for your use in comparing our charges.
Business _____	
Telephone No. _____	
TRUCK OR TRAILER INFORMATION	
Make _____ Year _____	
Model _____	
Style of Body _____ Top _____	
Rated Capacity _____ Unladen Weight _____	
Date Purchased _____ New or Old _____	
Price Paid _____ Present Book Value _____	
Motor No. _____ Serial No. _____	
License No. _____	
TIRE AND INSURANCE DATA	
(Check)	
Size Front Tires _____ Pneus. or Solids _____	
Size Rear Tires _____ Pneus. or Solids _____	
Insurable Value for Fire and Theft _____	
Collision Insurance—Full Cover or \$ _____ Deductible _____	
Property Damage Insurance Limits _____	
Public Liability Insurance Limits _____	
Miles per Year _____	
Miles per Gallon Gas _____	
How often is Truck Washed _____	
How often is Truck Painted _____	
What kind of Work is Truck used for _____	
Where can Truck be seen _____	
All Charges Computed on a Yearly Basis	
STANDING CHARGES	
Garage _____ Year _____ \$ _____	
Administrative Overhead _____	
Depreciation _____ Years _____	
Interest on Investment Yrs. % _____	
Property Taxes _____	
License—State _____	
License—City _____	
Total Insurance Premiums _____	
Cost of Washing _____	
Cost of Painting _____	
TOTAL Cost of Standing Charges _____	
Cost of Tires _____	
Cost of Gasoline _____	
Cost of Oil & Grease _____	
Cost of Repairs to Body _____	
Cost of Repairs to Chassis _____	
Reserve for Repairs due to Accident _____	
Cost of Battery Maintenance _____	
Loss of Use _____	
Cost of Replacement _____	
Driver's Wages _____	
TOTAL COST PER YEAR _____	
TOTAL COST PER MONTH _____	
TOTAL COST PER DAY _____	
TOTAL COST PER MILE _____	
Contract Written for _____ years _____	
Rate per Excess Mile _____	
Allowance at end of contract \$ _____	

Above: Estimate sheet employed by the Transportation Guarantee Co. when making a survey of operating costs of a prospective customer in order to arrive at a maintenance rate

Below: San Francisco plant of the Transportation Guarantee Co.

San Francisco Concern Does Successful Business by Assuming Maintenance and Storage Responsibility of Fleet Owners

By Mandus E. Bridston

THREE years ago H. Jarvis, late of England as an expert in motor vehicle maintenance, had a vision of a new type of truck maintenance for fleet operators. San Francisco was chosen for the experiment. A corporation was organized, a plant constructed at a value of \$320,000, consisting of 80,000 sq. ft. of space on one floor.

Briefly, the plan involves relieving the fleet operator of all maintenance worries by contracting for this work on a mileage basis, the contractor to be paid a flat rate each month. Last year the volume mounted to a gross of \$650,000. This innovation in the

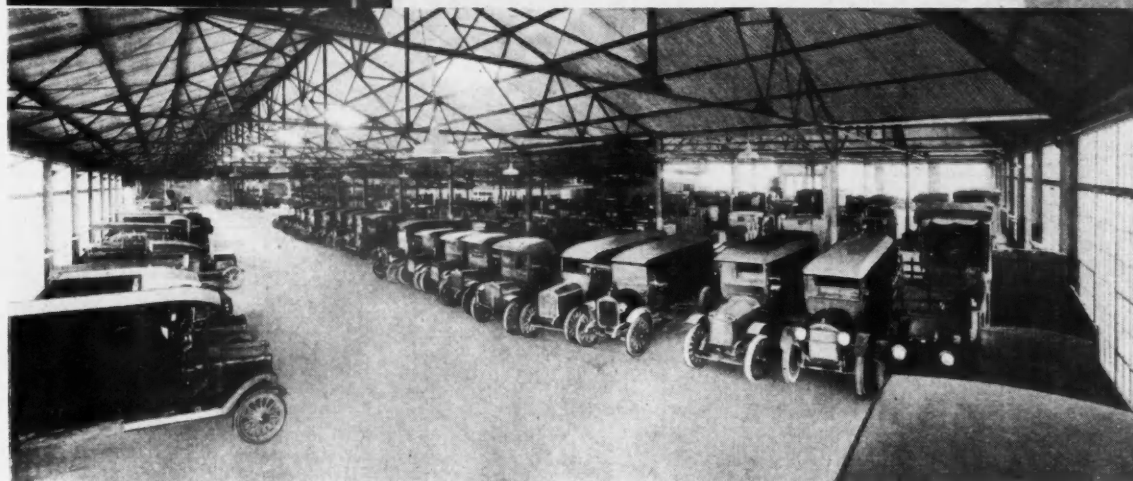
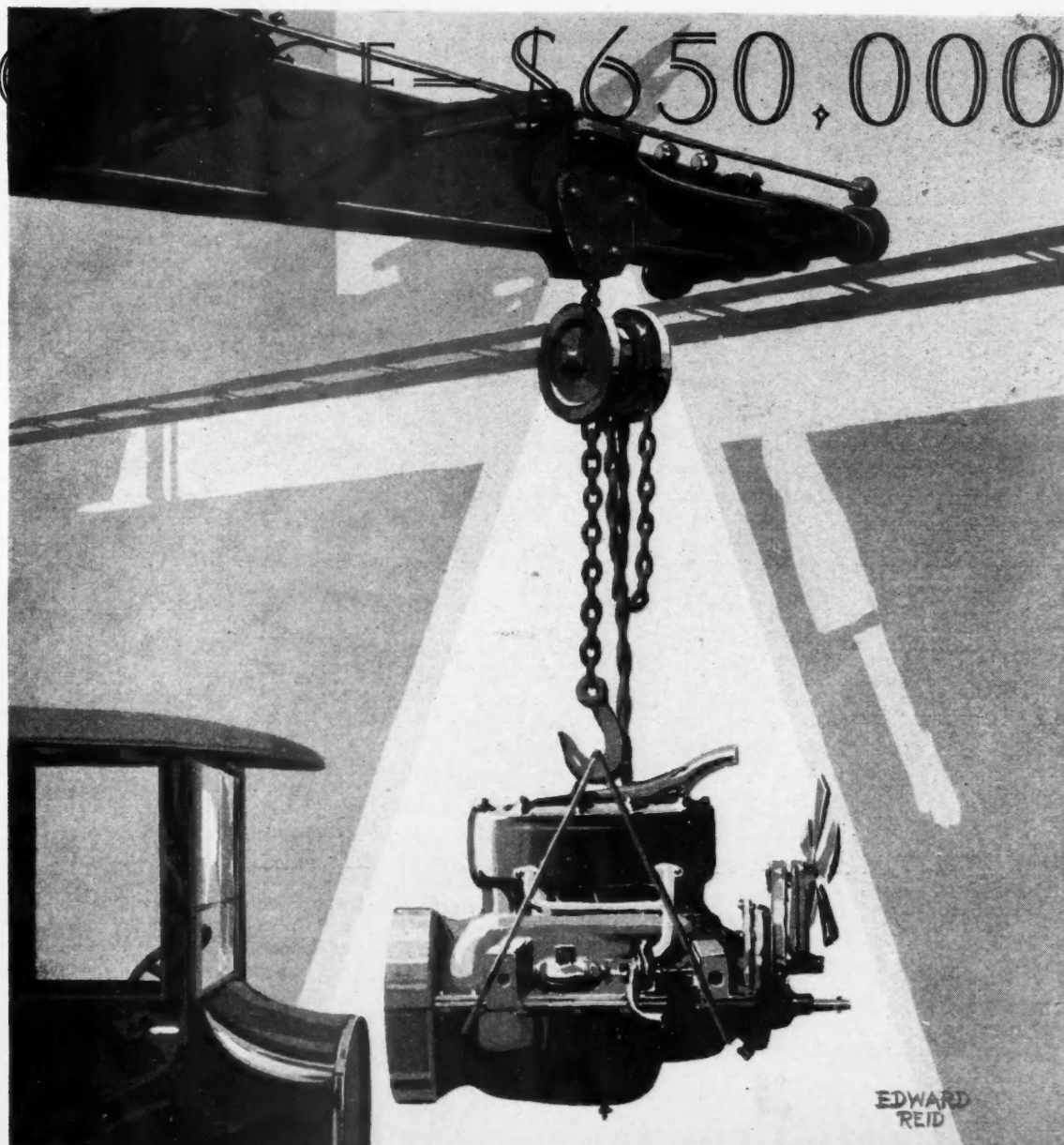
motor industry has proved a decided success from an operating standpoint.

The maintenance company agrees to do the following things:

1. Furnish storage.
2. Supply state and city licenses for customers' vehicles.
3. Supply tires, oil, grease, gasoline.
4. To keep vehicles in serviceable and roadworthy condition for 16 hours per day.
5. To wash and paint vehicles at regular intervals according to schedule agreed upon with customers.
6. Provide fleet owner with substitute



STOCK PRICE \$650,000



Looking down one of the bays of the large San Francisco plant of the Transportation Guarantee Co.

transportation when necessary.

7. Supply vehicles with insurance against fire, theft and collision.
8. Allow fleet operator at the

- expiration of contact period a specified sum in trade on a new vehicle. (Optional.)
9. To furnish drivers for trucks, salary to be paid by owner. (Optional.)

And the charges incident to all this service is allocated on a mileage basis with a flat fee, payable monthly. The advantages to fleet operator are many. As a rule he is either a manu-

facturer or a merchant, whose chief interest is elsewhere than transportation. He knows little or nothing about trucks or their maintenance, and as a rule he is compelled to place the supervision of this very important branch of his business in the hands of a subordinate. Many fleets do not justify the hiring of a high-priced transportation expert, who could do justice to the problem. As a result, many delivery fleets are operated in a haphazard manner and at excessive cost. Furthermore, the fleet operator has only a vague idea of what his delivery cost is.

Paying a maintenance contractor on a mileage basis, responsibility of details is lifted from his shoulders, and he knows exactly what his transportation costs are. He can govern his merchandise mark-up accordingly to allow for this distribution expense.

Guesswork is eliminated. His sole concern is the financial ability of the maintenance firm to fulfill the terms of the contract. Goods are delivered under the supervision of the fleet operator at so much per.

And operation, so far as the maintenance company is concerned, has been proved practical by the Transportation Guarantee Company. At the beginning of 1929, over 300 pieces of equipment were cared for in the plant, of almost every type ranging from the half-ton unit to 20 tons. Less than 5 per cent is required in reserve equipment, to take care of substitution. If a truck is out of condition during a working day, this company agrees to forfeit a penalty of \$10 per hour within the 16-hour day, that the truck is laid up for repairs; and in the three years of operation only \$30 in penalty has been paid.

The most important aspect of a venture of this kind, considered from a practical business standpoint, is the establishment of equitable rates that will be fair to the fleet operator and pay the maintenance concern a fair return on investment. Naturally enough the mileage rate varies with the size of truck, make and total amount of mileage used during a specified period. The less mileage a truck consumes the higher is the mileage rate.

Mr. Jarvis, as general manager, in building his rate structure has acquired cost per mile data of practically every make of truck. All variable factors have been considered to a fine point in order to arrive at fair rates to all concerned. Also the element of competition enters in, for no fleet operator

is willing to pay more to an outsider than the cost of maintenance in his own garage. Obviously the small fleet operator can't compete in cost with mass maintenance in the hands of experts whose sole interest it is to keep the wheels running 16 hours per day at the lowest possible cost commensurate with efficiency. Furthermore, in view of the fact that the maintenance company agrees to allow a specified sum as trade-in value at the end of the contract period, it is to everyone's advantage to prevent dynamiting the vehicle by abusive driving or makeshift repairing.

The type and age of a vehicle is also a variable factor in rate-making, not only in the mileage rate but also in the length of the contract period.

In order to arrive at a maintenance rate that is equitable to the owner and understood by him, Mr. Jarvis makes a survey of operating costs of the prospective customer. An estimate sheet is provided for this purpose, shown in the accompanying illustration. It includes truck and trailer information, standing chargers by the year and current charges. Recapitulation is made as total cost per year, total cost per month, total cost per day, total cost per mile.

These figures taken from the fleet operator's records, if available, are merely relative so far as the maintenance company's rates are concerned. Jarvis quotes a figure based on his own records, and this is compared to the operator's figures for comparative purposes. In other words, Jarvis does not dodge the matter of maintenance costs; he wants the customer to be assured of the economies of the new plan before he signs any maintenance contract.

Possibly some of the points of the service contract, briefed at the beginning of this article, may need further exposition in order to clarify them. So far as insurance is concerned, the Transportation Guarantee Company, assumes all cost of policies. However, the loss or damage under the policies are payable to the owner, but owner agrees not to settle any insurance claims arising out of damage to the motor vehicle (other than total destruction), without the approval of the maintenance company, and agrees, further, to pay maintenance company all insurance moneys paid on such claims in order to compensate it to the extent of such insurance money in making all necessary repairs and furnishing owner with a substitute vehicle while repairs are being made.

The mileage rate agreed upon is based on estimated total mileage. If the actual mileage exceeds this figure, the owner is given a reduction in the per mile rate of all excess mileage.

The matter of the maintenance company furnishing drivers is really an extension of service to the operator, who does not feel competent to hire expert drivers, or who does not want to bother even with this phase of delivery. In this case, the maintenance company acts merely as an agent for the owner, hiring the men at union wage scale, the

owner agreeing to pay any increase in wage scale during the life of the agreement, and any extra time over and above the specified number of hours per day. However, the drivers are considered as employees of the owner, and can be relieved of their duties at the owner's discretion.

In the case of complete destruction of a vehicle, by accident or theft, the maintenance company is not required to furnish a substitute vehicle for a period longer than 30 days. At the end of that time, if the owner has not provided a new vehicle to replace it, the contract is voided. Obviously, a separate contract is required for each vehicle.

The contract is composed of two parts. The first part is devoted to the terms, and the second part consists of a memorandum of description of the vehicle, listing name of owner, size and description of the body, accessories, etc.

In other words, all aspects of the transaction are included in a written contract, so that there can be no misunderstanding or later disagreements.

As strictly a free service, the maintenance company offers to advise customers as to selection of chassis and body equipment to fit specific jobs, routing of deliveries, and such other problems pertaining to transportation as may arise. At the time the writer visited the plant, a survey was being made for the fleet of the San Francisco Examiner, Hearst newspaper, with a view toward rerouting the deliveries to secure economies of operation. This work is done gratis by the maintenance company as part of the service to customers.

The most modern facilities available are used in the repair shop; the plant has its own body shop, its own painting department and so on. The total mileage of trucks aggregates 7,000,000 miles annually, and the economy of the plan is evidenced in the fact that only 45 employees are required for this total mileage.

Another interesting phase is the drivers' quarters, provided with lockers, rest rooms, and even a lunch counter where the company donates coffee and doughnuts in the morning, so that drivers need not eat breakfast on the fleet operator's time.

Over three years of operation finds the company expanding, indicating fleet operator satisfaction and a profitable venture on the part of the maintenance company. Plans are now under way to extend the project to other cities.

A story telling how an independent organization sold a steel plant on the idea of hauling fuel oil by motor truck on a contract and gallon rate basis instead of by railway will appear next month.

WHAT IS WANTED OF A DELIVERY TRUCK?

Number of Deliveries Per Day Rather Than Miles Per Hour Determines Its Economic Value to the Operator

By H. D. Church

Director of Engineering, White Motor Co.

THE demand for speed in modern delivery service has led to many misconceptions, some on the part of manufacturers of delivery equipment, others in the minds of operators. Results are found in unbalanced operations, expensive failures and excessive depreciation of rolling stock.

Speed in delivery, as a matter of fact, does not mean racing equipment. Present-day traffic conditions put a negative value on maximum speeds and a premium on quick get-away and flexibility. Profitable speed is measured not in miles-per-hour, but miles-per-year. Furthermore, miles-per-year, on a profit basis, are not arrived at merely with multiplying miles-per-hour by so many days.

Operators seldom stop to figure the actual average miles-per-hour in useful service obtained from their trucks. The figure would startle some of them. It is entirely dependent upon the operation, being different in every case, but invariably it is a figure which indicates beyond any doubt that every idle minute is a matter of importance.

Though we confine ourselves to light delivery

operation, let us say of the type which applies to department stores, we are confronted with the fact that no one set of figures applies to all cases. Some stores operate only city delivery. Others deliver small quantities of goods from the main store and have sub-stations at strategic points. Still others deliver both in the city and to outlying points from the main store. In the outlying deliveries some are made daily to points as much as 30 miles from town, and others at specified times during the week to points 75 miles away.

For the purpose of illustration, however, we may take figures which would apply to a great many operations. . . . A route having 150 stops and a run of 40 miles in a day. Ten hours is a long enough

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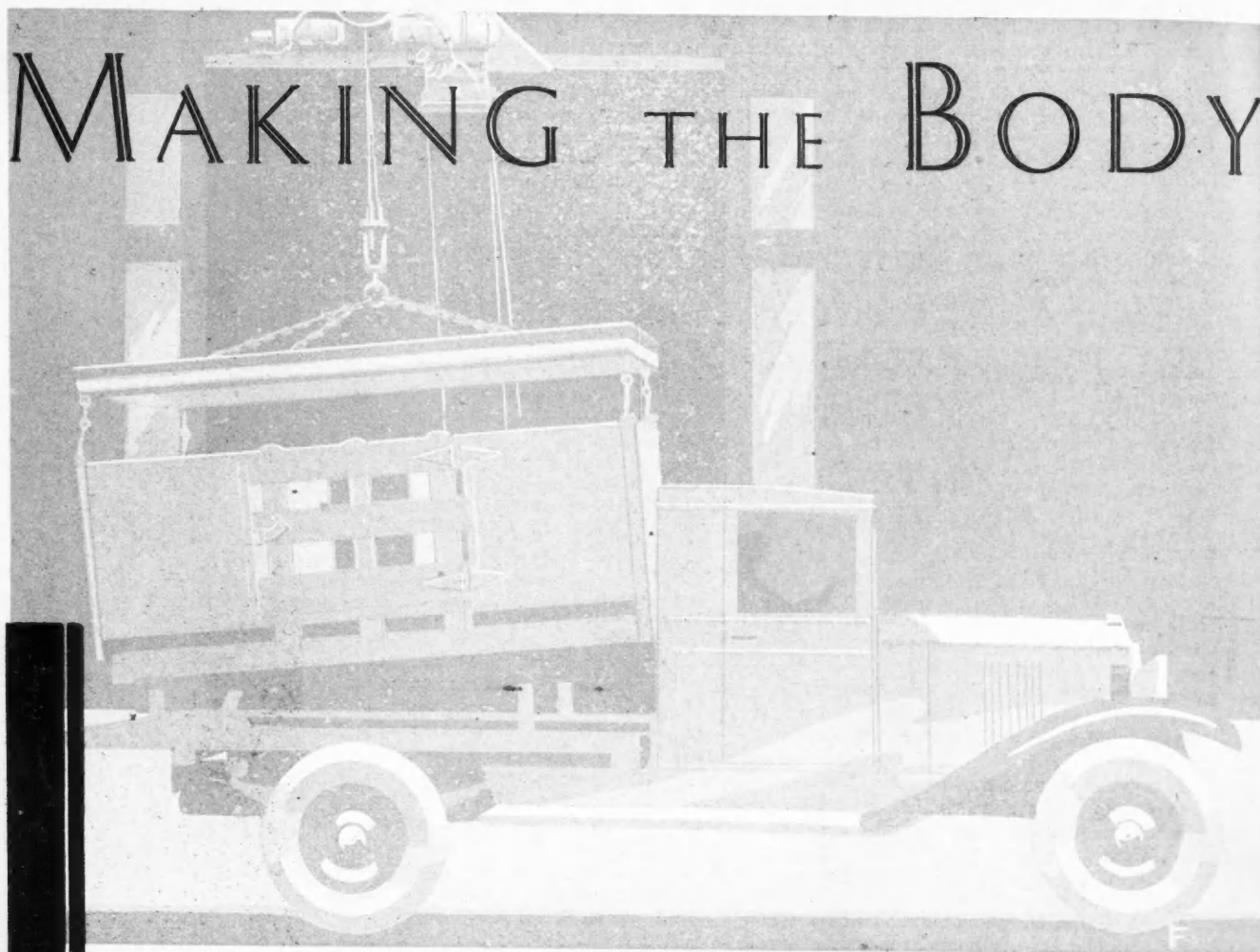
The Commercial Car Journal and Operation & Maintenance



H. D. Church, director of engineering, White Motor Co.

Left: Speed in delivery demands efficient routing, dispatch at point of delivery, quick get-away and flexibility

MAKING THE BODY

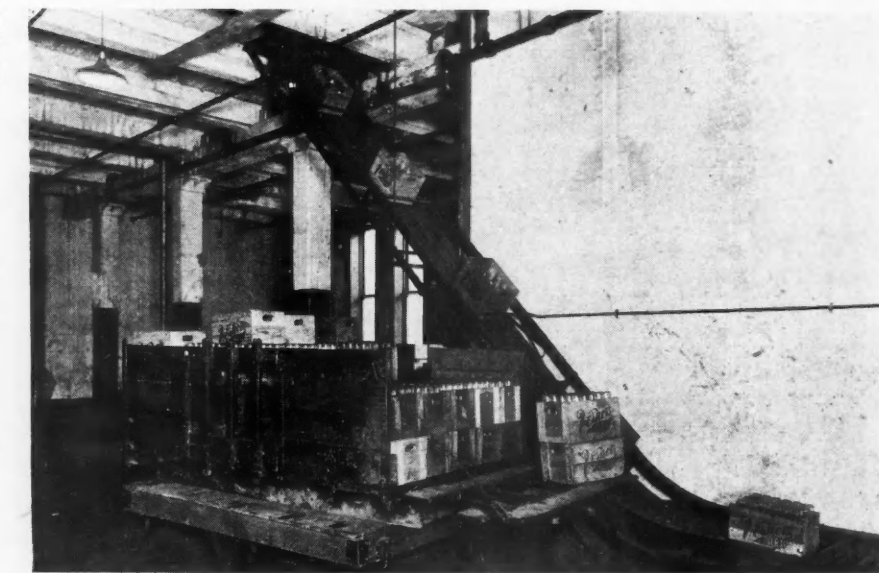


Above: When a truck arrives with a load of empties the body is lifted from the truck by electric hoist and placed on a dolly inside the building

BY applying the demountable body idea to light trucks the James Vernor Co., Detroit, Mich., producer of ginger ale, has coordinated delivery with plant production, eliminated loading platforms and greatly reduced time and labor involved in loading and unloading trucks.

Although far-reaching in its effect upon plant operation and upon delivery cost, the plan is free from complication and seemingly is susceptible of application to other lines of business.

Less than three minutes is required to remove a body filled with empties and replace it with another body containing cases of bottled ginger ale assorted and placed in position for delivery on a particular route. During busy seasons, the delivery schedule frequently calls for dispatching a load every 2½ minutes and this is accomplished at one loading space at the curb. In



Dolly and body are pushed beside an escalator and cases are unloaded onto the moving belt

fact the entire fleet of 75 trucks used for wholesale and retail delivery is loaded and unloaded at this one curb space.

Bodies are removed from and loaded on trucks by means of an electric power hoist extending from a monorail inside the building, across the sidewalk to the curb line. Inside the building the bodies are placed upon factory type floor trucks or dollies and unloaded by hand onto an escalator extending to upper floors of the plant. Body and dolly

then are pushed to a gravity roller conveyor on the opposite side of the room and loaded with cases of filled bottles. Dollies and bodies move around in a circle, a sort of merry-go-round, the operations around the circle in order being: checking returned empties, loading cases on escalator, filling body with

A PLANT UNIT

Bottler by Applying Demountable Bodies to Light Trucks Coordinates Delivery With Production

a route order, placing in position under electric hoist.

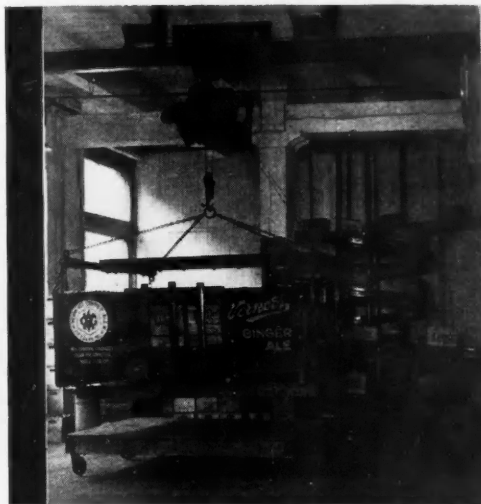
Little change is made in either body or truck to adapt them to the loading plan. The bodies are of platform type with fixed end panels and side gates. In outward appearance they are no different from ordinary bodies. Closer inspection will reveal iron straps at the ends with four eyes, one at each corner, for lifting. Attached to the hoist hook is a ring with four chains extending to four corners of a rectangular channel iron frame. Hooks are fastened to four

trucks used for retail delivery are alike, as are all of the bodies. Bodies, therefore, are interchangeable and are mounted, as desired, on any truck, irrespective of make.

Light trucks are used by the Vernor company for retail delivery because there is less handling of cases in a smaller load, delivery can be made with one man, without a helper, and the vehicle is easier to stop and start. Retail delivery trucks are of 1½-ton capacity and the average load is about 2750 lb. Larger trucks, without demountable

bodies, are used for deliveries to suburban points and to branches of the company in other cities. A high-speed truck and trailer outfit also is employed for delivery to branches which are situated in Cleveland, Cincinnati, Columbus, Dayton, Toledo, Buffalo, Niagara Falls, Pontiac and Flint.

The accompanying illustrations, reading from left to right, depict the complete loading and unloading cycle. Arriving at the platform the body with empty cases is hoisted on a dolly inside the building, body and dolly are pushed beside an escalator, where cases are unloaded onto a moving belt. The empty body is then pushed to another part of the room, where it is loaded from another conveyor, and finally the loaded body is again lifted onto the truck by the electric hoist, less than three minutes after truck arrives.



Above: The empty body is moved to opposite side of the room and loaded from a gravity roller type conveyor. Right: Loaded body is placed upon the waiting truck by electric hoist, less than three minutes after truck arrives

corners of the frame and these are attached to four eyes on the body for raising or lowering.

The body rests upon an angle iron frame on the truck above the truck frame. As the body is lowered it is "steered" into position by four prongs extending upward from the side rails of the extra frame. There are no fastening devices at all and bodies are held in place solely by gravity. It was thought that the bodies might be displaced when going over bad bumps empty but experience has shown that no such movement takes place.

Extra loading frames on all of the



FIVE NEW IDEAS

Bread Delivery

Specially designed and embodying numerous advantages the bodies of the Zim Bread Co., Colorado Springs, Colo., provide much to be desired in a truck for delivering bakery products (Fig. 3). These bodies have two compartments, each of which has four sliding shelves that move on angle iron supports toward the doors. The front compartment is used for special breads and cakes and is reached through a door on the right side, while the rear is used for white bread. Sliding shelves, which are pulled toward the doors by cords, make reaching unnecessary when loading or unloading. Each shelf consists of three boards, to the innermost one of which the cords are attached. As the cords are pulled the boards are removed. The last board is also provided with a back board to prevent loaves from toppling back into the lower shelf as it is drawn forward.

Inside dimensions of the rear com-

Fig. 1—This truck, owned by the City of Detroit, and used in municipal service, provides accommodations for six engineers and their instruments

Fig. 2—Weldmech triple-deck welded steel bottler body mounted on a Ford chassis

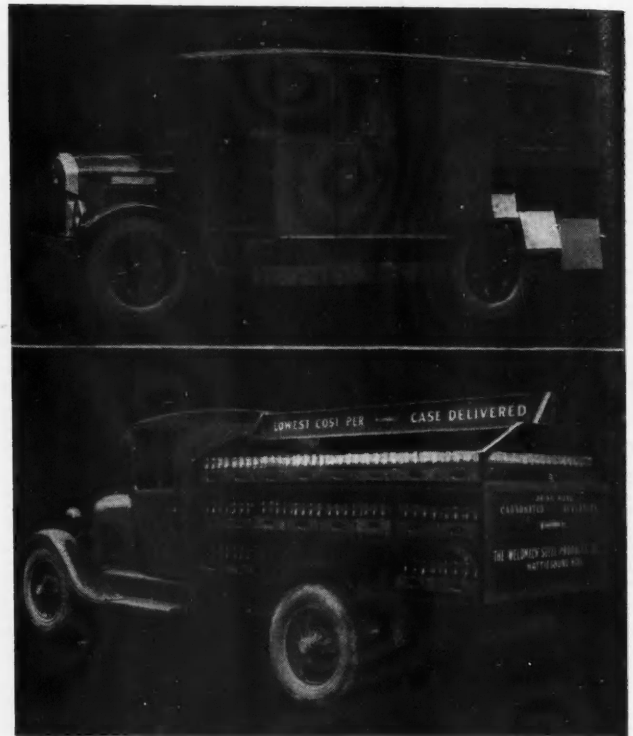


Fig. 3—Rear and side view of a delivery unit used by the Zim Bread Co., Colorado Springs. Sliding shelves operated by cords make reaching unnecessary when loading and unloading

partment are: Height, 56 in.; width, 56 in., and depth, 57½ in. The dimensions of

the front compartment are the same except for depth, which is 26½ in. The rear compartment can carry 260 1-lb. loaves per shelf, or a total of 1040, while the front can carry 114 per shelf, or 456 all told. Capable of carrying 1500 loaves per load, these trucks frequently deliver as much as \$135 worth of bread per trip.

The interior of the body is of ship-lapped poplar, while outside panels are of ¾-in., 20-gage Haskalite and top slats of solid ¾-in. poplar. The floor consists of a 1-in. sub-floor overlaid with ¾-in. maple, drilled and screwed, no nails. The rear of the body is heavily ironed, corners are welded and the sides are fitted with ¾-in. half-oval aluminum molding. Rear and side doors swing flat against the body. These bodies were built by the Morrissey Carriage Co., International Harvester deal-

ers at Pueblo, Colo., which company also furnished the chassis, ¾-ton, 116-in. wheelbase Internationals.

Surveyors' Truck

The City of Detroit recently purchased a special job for the engineering and surveying division of the Department of Public Works (Fig. 1). Formerly the city was required to furnish its engineers with transportation to the job and send instruments and tools in another truck. With the new equipment accommodations are provided for six men as well as their instruments and tools. Another advantage of the truck is the fact both the men and a complete assortment of tools arrive at the job simultaneously.

The body is mounted on a 1½-ton, 134-in. wheelbase, Fisher Fast Freight. It is 9 ft. long back of the driver's cab. A special compartment for the engineers is provided midway in the body. Entrance is through a side door. Back of this compartment is the tool and equipment section, with an exit door in the rear. Along the sides and under the rear section are various sized tool boxes with covers. The rear compartments are equipped with non-shatterable glass.

Piano Van

J. Sturm & Sons, Inc., Newark, N. J., recently designed and built a body with a floor curved downward at the rear to

IN CUSTOM BODIES

meet the requirements of piano moving for the Griffith Piano Co., Newark (Fig. 4). Except for half-way side paneling the body is of van construction. The body and cab are built as a unit, but are separated by a partition carrying two small windows to permit rear vision. The roof is supported by three uprights on each side and by the cab posts in front. Three curtains on each side are provided for protection against the elements. Side panels extend down to and enclose the running boards, giving the impression of lowness. To enable the operator to lash pianos in shipment firmly in place rope knobs are provided along the top edges of the side panels and on the outside of the rear posts. The tail-gate, well ironed and equipped with chains, corresponds in height to the half-way side panels. Starting at a point above the rear axle the floor

curves downward toward the rear, bringing the body within 36 in. of the ground at the tail-gate. The tail-gate, which is 36 in. high, may be lowered to continue the slope, thereby forming a ramp over which pianos can be moved readily. Inside dimensions: length, 16 ft.; width, 7 ft., and height, 6 ft.

Overhead Rack

To provide additional space for peak requirements, A. Chartier & Son, fruit and produce merchants of Gardner, Mass., had a body designed with an overhead rack, which extends from back of cab to the radiator

(Fig. 5). The body itself was also designed to carry capacity loads from the wholesale markets and is 7 ft. 6 in. wide and 14 ft. long. The sides consist of permanent solid panels extending 6 in. above the top of the cab and a 1-ft. extension made of three slats, also permanently attached. Front panel, back of cab, is solid. The tail-gate is 2 ft. high, bound with angle iron and furnished with chains. To facilitate roping the load to the body, 12 hooks are provided on each side of the body at the bottom and five knobs on each side of the body on outside of rear posts.

Two-inch angle irons with straight sides extending from back of cab to front of radiator, two channel irons down the center and substantial braces form the frame of the rack. The deck consists of 4-in. slats spaced 1½ in. apart. The front of the rack, which corresponds in width to the width of the body is fitted with a 7-in. signboard, the top edge of which is flush with top of rack. Rope hooks are provided on each side of the rack, spaced 6 in. apart. These permit loads to be strapped securely to the deck.

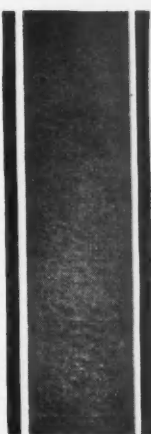
Both the truck and body were built by the Larrabee-Deyo Motor Truck Co., Binghamton, N. Y.

Beverage Body

A line of electrically welded steel, triple-deck bodies for hauling bottled beverages on Ford, Chevrolet and other light capacity trucks is being offered by the Weldmech Steel Products Co., Hattiesburg, Miss. These bodies are built in three-case and four-case widths and in lengths ranging from 41 to 225 in. to carry from 41 to 236 cases, according to the requirements of the operator and the specifications of the truck on which they are to be mounted (Fig. 2).

The bodies are constructed of structural steel and sheets, reinforced and braced where necessary. Every joint is welded. This construction, it is claimed, makes this body 500 to 800 lb. lighter than an ordinary body. The vertical deck supports are set edgewise between the cases. This eliminates interference with cases caused when such supports are placed flat alongside the body. If desired, spacers are furnished as extra equipment for attaching across the decks at points of upright supports to divide the decks into spaces and aid in case alignment. End blocks to keep the cases clear of the corner angles

(Turn to page 48, please)



Upper: Fig. 4—The floor of this van type piano moving body slopes toward the rear forming together with the tail board a loading ramp

Lower: Fig. 5—An overhead or wool rack enables the owner of this truck to meet peak requirements. The rack is permanently attached and extends to the radiator

TRUCK TERMINAL

Joint Facilities
Make It Possible
for Manufacturers to Ship
Carload Lots to
Distributing Cen-
ters for Local
Truck Delivery

By
G. Lloyd Wilson

*Professor of Commerce and Trans-
portation, University of Pennsylvania*

THE connection between motor freight transportation and warehousing is an intimate one. The combination of modern warehousing and twentieth century motor freighting has done much to revolutionize distribution. Through the joint functioning of these two facilities, distribution has changed from a slow moving process to one of great and increasing celerity. The warehousemen and the transfer and cartage op-



erators of Indiana have worked cooperatively to improve distribution continuously since 1917 when the Indiana Transfer and Warehousemen's Association was organized. This association was promoted to improve relations among warehousemen and transfermen and to promote the interests of these closely affiliated businesses. The state association assisted in the organization of local city cartage and warehouse clubs in the principal cities of Indiana, which in cooperation with the state association worked for and obtained many advantages for the benefit of the cartage and transfer industry, including:

1. Relief from oppressive city tax ordinances
2. Fair traffic regulations
3. One way street and alley regulations
4. Concrete paving approaches at railroad freight stations, and
5. Other regulations protecting the interests of the members.

For nearly ten years, from 1917 to 1926, the Indiana Transfer and Warehousemen's Association admitted to membership only individuals or companies engaged in the commercial haulage or warehousing businesses, but in 1926 the by-laws were amended so as to make all truck operating interests eligible to membership. The name of the association was changed to indicate the broader scope of its activities to the Motor Truck Association of Indiana.

This association has functioned continuously since 1926 as a voluntary non-profit organization composed of many of the largest fleet operators in the state which is seeking to defend the motor truck operators against adverse legislation and to promote the interests of the motor haulage and storage business. The activities and benefits of this association are best appreciated by noting some of the most important accomplishments which include:

WAREHOUSING



Note — The Seventh Article of a series on cooperative truck terminals

1. The defeat in the state courts of inequitable city horse-drawn vehicle ordinances
2. Assistance in the passage of the gasoline tax law which was favored by the motor haulers
3. The enactment of a state transfermen's lien law which protects carriers from bad debts
4. The defeat in the state courts of an industrial tax imposed by city ordinance
5. Assistance in a movement which resulted in placing the freight terminals of the electric railway in the new wholesale district in Indianapolis
6. Assistance in obtaining the elevation of railway tracks in the central district in Indianapolis
7. The defeat of excessive motor truck tax ordinances
8. The defeat of an excessive increase in the state motor truck vehicle license fees
9. Assistance, in cooperation with the motor truck associations of other middle western states, in the passage of reciprocal relation clauses in the motor vehicle laws of several states
10. The assistance rendered to member carriers in obtaining certificates of public convenience and necessity
11. Supplying members with rate schedules and rules and regulations governing the contracts of transportation between shippers and carriers, and
12. The organization of central motor truck terminals and warehouses in industrial and commercial centers of sufficient size to support such facilities.

Warehousing and Motor Freighting

The development of cooperative motor truck terminals and warehouses in commercial centers has made it possible for manufacturers to ship solid carloads of their products to the distribution centers, consigning the shipments to the warehouses. Upon arrival, the cars are unloaded by the employees of the warehouse companies, and the instructions of the shippers are followed in disposing of the freight. Parts of the shipments may be stored awaiting further orders and the rest turned

over to the cooperative motor terminal organizations to be delivered to a number of consigners located on the routes of the motor lines using the terminals.

Quick and economical distribution is made possible by linking the carload freight service of the railroads, the storage service of the warehouse companies, the small-lot distributive service of the motor carriers. Shippers, through the system of distribution, are able to take advantage of the low rates and fast freight service of the railroads, of the storage and distributive services of the warehouses, and of the fast and direct service of the motor carriers. Each transportation and distribution facility is used in the most efficient way and at minimum expense.

Stocks of goods may be kept on hand at the warehouses to fill orders as they are received from the trade in each territory. Replacement shipments may be made from the factories to the warehouses as they are needed. Reduced inventories, rapid turnover, hand-to-mouth buying, release frozen assets for more productive uses.

The integration of railroad, warehouse and motor truck freight services to speed up distribution may be illustrated by the accompanying diagram.

In distributing freight for manufacturers using this system of distribution the warehouse companies act as the agents of the manufacturers, receiving the inbound carload freight, checking the contents of the cars, attending to freight changes and putting the goods in store. The warehouse companies turn the goods over to the motor terminal organizations for delivery and arrange for the payment or collection of freight and other charges. The warehouse companies keep complete records of the receipt and distribution of each piece of freight and attend to all phases of handling the goods and the paper work incident to the receipt and delivery of the goods, for which they are compensated by the manufacturers using the service in accordance with contracts entered between the parties.

The warehouse companies and the motor freight terminal organizations attend to the transfer of the goods from the cars or from storage to the motor trucks, and attend to the records incident to turning the freight over to the motor truck lines for distribution. For these services fees are paid by the motor lines receiving the freight for distribution. A typical agreement between a truck terminal company and the lines using the services of the company provides that the line operators will pay the operating expenses of the terminal company incident to all freight secured for points on the routes of the motor lines and a terminal fee to cover the handling of freight and the keep-

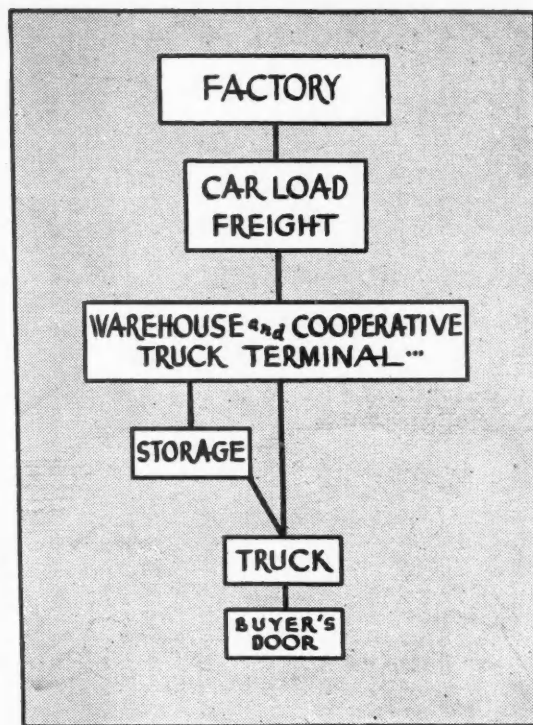


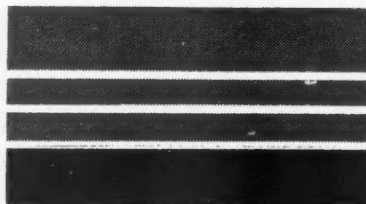
Diagram showing integration of railroad, warehouse and truck

ing of proper records. If the terminal company secured orders for transportation services in connection with shipments to any point in the territories served by the motor lines which the carriers cannot or do not wish to transport, the terminal company reserves the right to furnish the equipment, to handle the freight and to transport the shipments in its own right and for its own benefit and profit.

Motor freight carriers which operate through cooperative truck terminals in common carrier freight services are required, in most states, to conform to special regulations of the state public service or public utility commissions or of other administration agencies charged with the responsibility of regulating the services and rates of public service companies. In addition to these special requirements, the operators of motor freight services must obey the provisions of the state laws governing the operation of all motor vehicles.

The state motor vehicle laws regulating the operation of all motor vehicles on the highways of the state include:

1. The regulation of the rates of speed at which the trucks are operated
2. The issuance of vehicle and drivers' licenses



3. Limitations upon the size and weight of the trucks
4. Safety regulations
5. Taxes and fees applicable to the ownership and operation of motor trucks, and
6. The issuance of certificates of title.

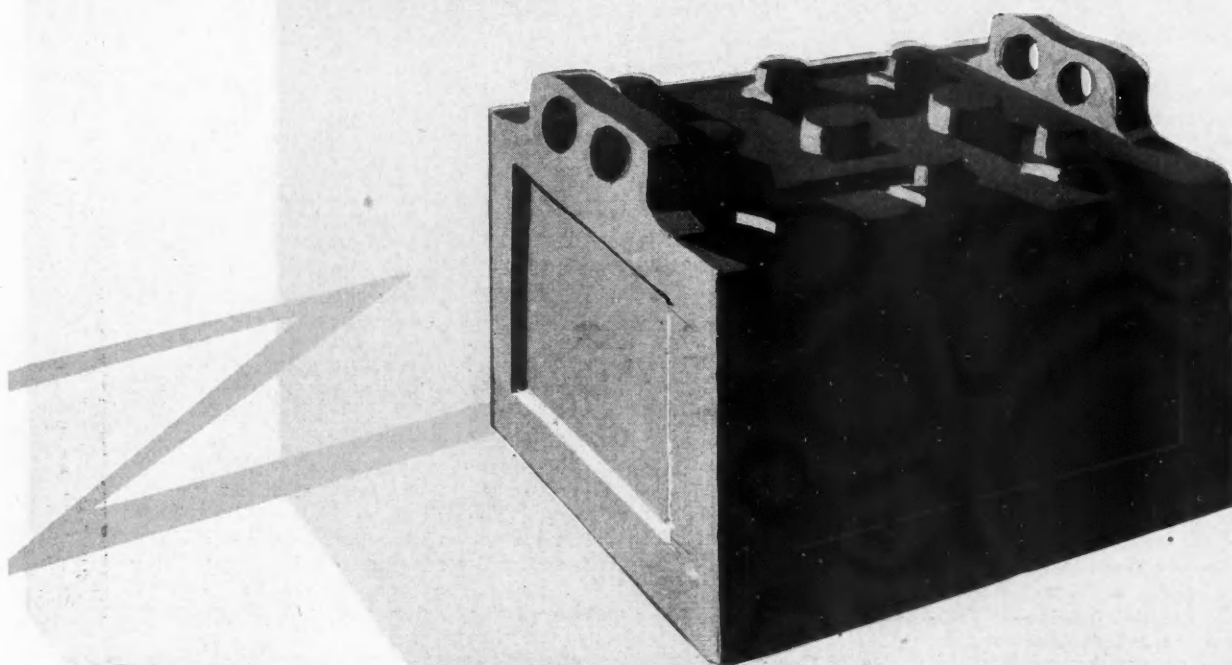
The regulations of the state commissions applicable to the operation of motor truck freight services vary from state to state, but include, as a rule, the following typical regulations of the business of common carriage by motor truck:

1. The requirement of certificates of public convenience and necessity as a prerequisite to operation
2. The filing of indemnity bonds to protect the interests of users of the services, and the public
3. The fixing of rates for transportation services
4. The requirement of filing tariffs of rates
5. The requirement of a proper system of freight classification
6. The fixing of standards of service and schedules
7. Special regulations in the interest of safety in truck operation
8. The requirement of special reports of common carrier freight lines
9. The examination of the accounts of motor carriers
10. Special speed regulations applicable to common carriers.
11. Approval of the sale or lease of lines
12. The regulation of the contracts of carriers
13. The regulation of the issuance of securities by motor lines
14. The permitting of the use of trailers in common carrier motor services
15. The carriage of insurance to protect shippers and consigners, and
16. The regulation of the use of trade names of the carrier lines, and the stenciling or lettering of the trucks used in these services.

State regulation of motor freight transportation is very comprehensive and will, doubtless, become more so as the motor truck extends its field of activity in distribution services through its connection with warehousing and cooperative motor truck terminals. The regulation, if it is based upon sound law, and if wisely administered, is in the best interests of shippers, carriers and the public. Motor freighting is a business in which the public has a large and growing interest, because it is serving an increasing field of public usefulness in working out America's greatest and most pressing industrial problem—the solution of the problem of high-speed low-cost distribution.

The next and final article in this series, which will appear next month, deals with the future of cooperative truck terminals.

REGULATED VOLTAGE



CONTROL units of Leece-Neville voltage-regulated electric systems embody a voltage regulator in addition to the customary generator cutout relay. The purpose of this voltage regulator is to maintain voltage of the system at a predetermined figure irrespective of the condition of the battery, or even with the battery disconnected. With a constant voltage, or potential, the amount of current flowing into the battery, to keep it charged, depends upon the charged or discharged state of the battery itself. When the battery is "up" only a small amount of current enters it, when it is discharged a large amount of current is flowing. The resulting charge to the battery tapers off from a high value at the start to a low amount at the finish.

The effect of this action

of the voltage regulator is shown on the dash ammeter and may give the impression that the generator is not functioning properly. If the voltage regulator setting is changed when the charging rate is low (because the battery is fully charged) the effect will be to raise the voltage of the entire system. This is harmful because it imposes an extra burden on the generator and lamps and increases the charging rate into the battery.

A low charging rate, as indicated on dash ammeter, may be due to proper regulator action or it may be due to some fault with the generator. Therefore both units should be checked before attempting adjustments.

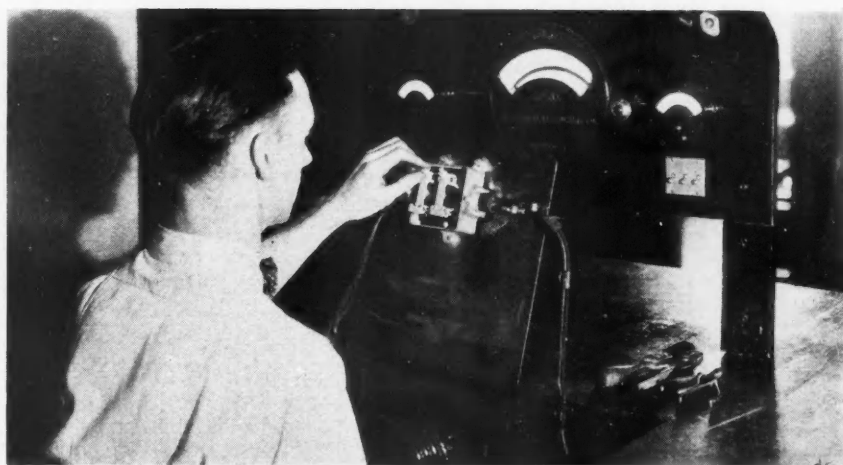
Some means of limiting maximum generator output is necessary to protect the unit from overload and overheating and this may be done by use of a third brush or by a current limiting regulator which is separate from the voltage regulator.

Three operations comprise check and adjustment of Leece-Neville two element control units and these operations should be made in exact order, according to the makers. These operations are:

Establish correct open circuit voltage by adjustment of voltage regulator.

Fix generator cut-in and cut-out points by adjustment of cut-out relay.

Limit generator ampere output by



Control element should be placed in vertical position for test. Generator leads are connected at left and battery, or instrument leads, to terminals on right. The test set-up shown is that used in the Leece-Neville factory

SPARES THE BATTERY

Adjust Control Unit to Maintain Pre-Determined Voltage in Electric System



Gap settings for cutout relay element are: Point gap, C9, .028 to .032 in., adjust by bending armature stop C7. Core gap, C10, .020 to .025 in. Hinge gap, C11, .008 to .015, adjust by means of hinge bracket C15 and screw C8. If gap is too small armature may bind on yoke; if the gap is too large the armature may operate on a weak magnetic field, resulting in faulty performance.

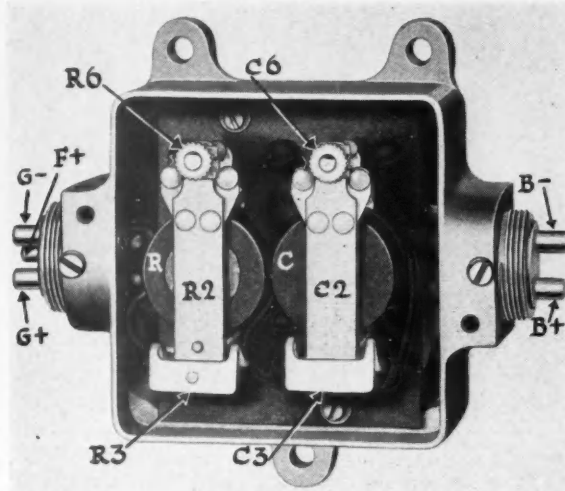
adjustment of third brush.

Methods of making these tests and standards for the tests, as established by the Leece-Neville Co., Cleveland, Ohio, are given in the accompanying photographs and text.

Adjustment Data for 6-7½-Volt Control Unit

Types 555-R, 676-R, 708-R
With generator at 1350 r.p.m. open circuit voltage 7.4 to 7.6 maximum output 15 amp.
Types 590-R, 594-R, 598-R, 599-R, 602-R, 603-R, 656-R, 672-R, 678-R, 686-R, 694-R, 722-R, 724-R, 734-R, 764-R
Generator speed 2000 r.p.m. open circuit voltage 7.3 to 7.5 Maximum output 15 amp.
Type 882-R
Open circuit voltage 7.4 to 7.6, maximum output 10 amp. at 1200 r.p.m.
Voltage to close cutout relay contacts 6 to 6.3 and discharge to open points 2 to 4 amp. for all of above types.

The Commercial Car Journal and Operation & Maintenance



Two-element small low-duty control unit. Coil assembly R is the voltage regulator and coil assembly C is the cutout relay. G+ is positive terminal to generator and G- the negative terminal. F+ is field terminal to generator. B- and B+ are battery terminals. Regulator is adjusted by nut R6 and cutout by nut C6.

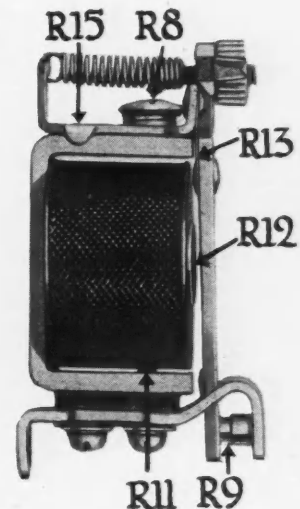
To establish correct open-circuit voltage. Disconnect battery leads from unit and connect test voltmeter to B+ and B-. Run generator at rated speed shown in table for 15 minutes. Turn nut R6 to right or left to obtain correct voltage as shown in table. Tap the armature several times and check voltage after taps.

To fix generator cut-in and cut-out points. Clean contacts C3 with crocus cloth and clean with paper drawn between points. Connect voltmeter to main brushes of generator. The first test is that of voltage necessary to close cutout contacts. Press on contact end of regulator armature R2 and with finger against armature allow it to return slowly by releasing pressure gradually. When pressure is first applied points R3 are opened and voltage is very low. As pressure is released the voltage increases. This performance permits adjustment of cutout relay C for cutting-in voltage.

This closing voltage should be according to table. If C2 closes at lower voltage turn nut C6 clockwise to raise, counter-clockwise to lower.

Second test is ampere discharge required to open points. Reconnect battery at B terminals with test ammeter on one side of battery-charging circuit. Reduce generator speed gradually until points C3 open and at same instant observe ammeter reading. Amperes should be within figures in table. If higher or lower than range shown recheck adjustment of voltage to close points.

To limit generator output, connect battery terminals at B. Run generator at speed shown in table and force voltage by holding regulator points R3 closed and at same time observe ammeter reading. If higher than value shown, adjust third brush opposite to direction of generator rotation to lower reading to correct value. The ampere rating in table is the maximum and must not be exceeded.



Gap settings for voltage regulator element are: Point gap, R9, .020 to .025 in., adjust by bending armature stop R7. Core gap, R12, .021 to .026 in. Hinge gap R13, .008 to .015 in., adjust by means of hinge bracket R15 and screw R8. If gap is too small the armature may bind on the yoke; if the gap is too large the armature may operate on a weak magnetic field, resulting in faulty performance. Measure gaps when armature R2 is against yoke R11.

Adjustment Data for 12-15-Volt Control Unit

Types 553-R, 702-R, 706-R
Open circuit voltage at generator speed of 1350 r.p.m. 14.4 to 14.6
Maximum output 10 amp. at 1000 r.p.m.
Types 528-R, 529-R, 530-R, 531-R, 532-R, 534-R, 535-R, 610-R, 618-R, 619-R, 628-R, 629-R, 630-R, 632-R, 648-R, 649-R, 659-R, 668-R, 669-R, 736-R, 740-R, 762-R, 782-R
Open circuit voltage 14.4 to 14.6 at 1500 r.p.m. generator speed
Maximum output 10 amp. at 1500 r.p.m. generator speed
Types 698-R 699-R
Open circuit voltage 14.6 to 14.8 at 1500 r.p.m. of generator
Maximum output 15 amp. at 2000 r.p.m. of generator
All of above types should close cutout relay contacts at 11.7 to 12.3 volts and open at 2 to 4 amp. discharge.

August, 1929

AFTER

Drivers

"The most important of all my observations in the examination of 2000 prisoners," says

Dr. G. F. Willey, field psychiatrist of the Pennsylvania Department of Welfare, "is the frequency with which low-grade feeble-minded and others presenting mental and neurological symptoms have reported truck driving among their occupations." At first reading this sounds like a terrible indictment of the truck-driving fraternity. But upon second thought it becomes indicative of a condition that departed as the truck arrived at its rightful place in the field of transportation.

After reading Dr. Willey's declaration we asked ourselves two questions: first, did truck driving attract only the low-grade mind, or second, did truck driving enfeeble what was originally a normal mind? A little cogitation convinced us that in the light of the past both questions might be answered affirmatively.

It is only in the last few years or so that the motor truck has become recognized as a vital factor in business, industrial and social life and progress. Before the era of good roads and speedy service the lumbering and ungainly truck was in the class of necessary evils. As such it got as little attention and consideration as possible. It was not recognized as deserving of any such thing as scientific control. Accordingly any man was hired as a driver who cared to associate himself with what was then considered little more than a public nuisance. And, of course, those who did the hiring didn't scruple about mental capacity. Doubtless many low-grade minds got behind the wheels.

If a normal mind took to truck driving who is to say that working conditions in those days weren't such as to unbalance it a bit? In open, uncomfortable cabs at the mercy of the elements, traveling without shock absorbers and with poor-riding springs and solid tires over unimproved roads, getting abuse from the highest in the organization to the lowest pedestrian, the brain that didn't become fatigued was a rare mass of nerve tissue. In a way, no one was more entitled to feeble-mindedness than old-time truck drivers.

So that while we'll grant Dr. Willey his findings as applying to a past period, justice inspires us to rush to the defense of the truck drivers of today. Competitive business conditions make economical truck operation a necessity, and in this the human element is the only unknown factor. Road conditions are known. What the truck can do and will do is known. But what the driver



can do and will do must be determined by experience. Fleet operators realize this and it does not take them long to weed out the feeble minds. Efficiency compels them to make the variable as invariable as is humanly possible.

Under modern methods of fleet supervision the moron driver has about the same chance as a snowball in—you know where.

Stocks

Recently the writer and Al Brownell, our business manager, whose laboratory is the field,

made a tour of truck dealer establishments in central Pennsylvania and parts of New York. Like the barroom quartet's bear that went over the mountain, we were out to see what we could see. And to hear what we could hear.

We heard, as usual, that it's the other fellow that over-allows on trade-ins. We heard, not so usual, that business is very good.

The best sight (we hope the paradox is clever enough to be pardoned) was nowhere to be seen. It was the absence of even normal new and used-truck stocks. It was the sign of a very healthy condition within the trade at a time when factories are turning out more trucks than ever before.

This condition in the territory covered may be taken as typical of the entire country. Moreover, every sign indicates that the second half of the year will not produce any such malignant disease as excessive stocks.

HOURS

Money

At a recent tariff hearing the Senate Finance Committee was told that "there is not a truck company making any money to speak of."

So far as we have been able to observe, this statement—rather alarming in view of the record truck production, domestic sales and exports in 1929 to date—hasn't been challenged by any truck manufacturer. However, while there has been no direct challenging our desk fortunately has been a receptacle for indirect challenges in the form of publicity items from the headquarters of many manufacturers who think their financial showings are something "to speak of."

We say fortunately because otherwise it would be an overpowering temptation to swallow a quick-acting poison if the truck industry in its greatest year had not made profits worth talking about. We emphasize the fortunately because otherwise it would have been more truthful than facetious to declare that the truck industry had a wonderful future behind it.

We understand, of course, that the uncomplimentary statement may have been made with full knowledge of actual conditions merely to influence the committee's decision in favor of retention of the 25 per cent ad valorem duty on trucks imported. But we must be allowed to question the helpfulness of even so pardonable a motive. With very few exceptions truck companies are having a good profit year, and anyone who has watched the industry's career will agree that that achievement is worth whooping up.

Nothing succeeds like success, and that goes for the truck industry. It has its pants pressed, has money in its pocket to jingle, and is going somewhere. We'll say it's going to better places than it has ever been, and that it will do greater things than it has ever done. A large order, you'll say. We'll agree. But highway transportation is certain to make big demands that only big orders will fill. The man who thinks the industry will stand still and in five years be where it is today, will find, if he ever awakes, that his trouble was sleeping sickness. It would be truly unfortunate for such an individual if he were in the manufacturing end of the truck business.

The signs of rapid progress are so obvious that even an explanatory blueprint would be superfluous. And the company that doesn't make any money to speak of will probably find that it's just not blowing its own horn loudly enough to be heard above the livelier competition.—G. T. H.

The Sedan Delivery

Complete with Body by Fisher

\$595 f. o. b.
factory,
Flint,
Mich.

(Bumpers and Spare Tire Extra)



Fleet Owners prefer Chevrolet trucks because of their:—

Fine Appearance

Commercial body builders have produced for the new Chevrolet six-cylinder truck chassis a line of bodies that are outstanding in appearance—rivaling passenger car design in smartness and beauty.

Operating Economy

Repeated tests, on the General Motors Proving Ground and in the hands of owners, have proved that the new Chevrolet six-cylinder trucks are actually as economical to operate as their famous four-cylinder predecessors.

Six-Cylinder Performance

The increased power, speed, flexibility and smoothness of Chevrolet's new six-cylinder valve-in-head engine have set an entirely new standard for performance in the low-price field.

Dependable Operation

Ruggedly designed in every vital unit, and built throughout of the highest quality materials, Chevrolet trucks stay on the job month after month with the very minimum of service requirements and upkeep costs.

The P. Lorillard Co. Purchases 275 Chevrolet Sixes

Another Indication of the Growing Demand for the Chevrolet Six among Fleet Operators Everywhere

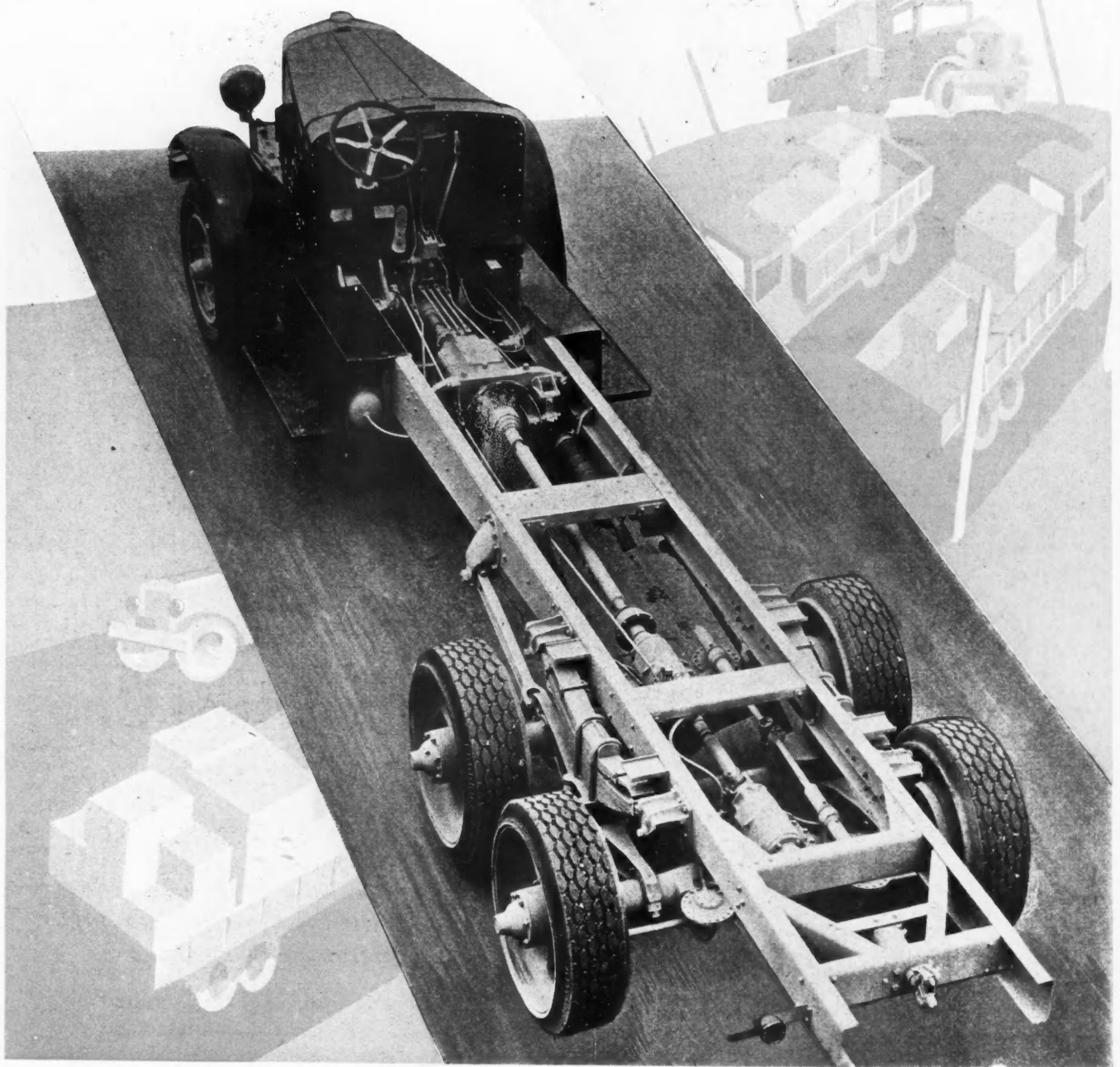
After careful investigation of the commercial car field, the P. Lorillard Co., manufacturer of Old Gold cigarettes and other famous tobacco products, has purchased 275 Chevrolet Six-Cylinder Sedan Deliveries for use by its field organization. Chevrolet units were selected because of their outstanding appearance, their fine six-cylinder performance, and their remarkable economy of upkeep and operation—which is actually as great as that of their famous four-cylinder predecessors. You'll find that Chevrolet trucks and cars are ideal for your business. See your Chevrolet dealer today!

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN
Division of General Motors Corporation

The Sedan Delivery	\$595	The 1½ Ton Chassis	\$545
The Light Delivery Chassis	\$400	The 1½ Ton Chassis with Cab ...	\$650

All prices f. o. b. factory, Flint, Michigan

BROCKWAY-INDIANA



Brockway-Indiana Model SW-40 incorporates a Timken tandem worm drive rear axle assembly. Drive is taken through I-beam section radius rods while torque is absorbed in the tandem unit. Sliding contact is used on both main springs and auxiliary springs mounted directly above them. This construction also is used on the four-wheel model. Double reinforcement is built into the frame. Liners extend inside the side rails from the wide cross member at the center to the gusseted cross member in the rear of the rear axles. A steel plate $\frac{1}{8}$ in. thick extends outside the frame forward from the front spring bracket of the rear spring. Westinghouse air equipment operates brakes on four rear wheels. Note that the air tank is placed out of the way above the step brackets on the left

TO meet requirements of modern heavy duty transport Brockway-Indiana is now producing a new six-cylinder six-wheel chassis and a companion four-wheel chassis. The six-wheeler is rated 40,000 lb. gross weight capacity as a truck and 70,000 lb. gross weight for tractor-trailer operation. Correspond-

ing four-wheel unit ratings are 30,000 lb. and 65,000 lb. respectively.

Although parts and units of both chassis are largely interchangeable, the company offers options in tire equipment, wheelbase and rear axle ratios to adapt either model to individual requirements. Solid, high pressure pneumatic or balloon tires are supplied on customer's specifications and dual rear tires are available.

In the six-wheeler a Timken tandem worm drive axle unit is used and a single Timken worm drive axle is embodied in the four-wheel chassis.

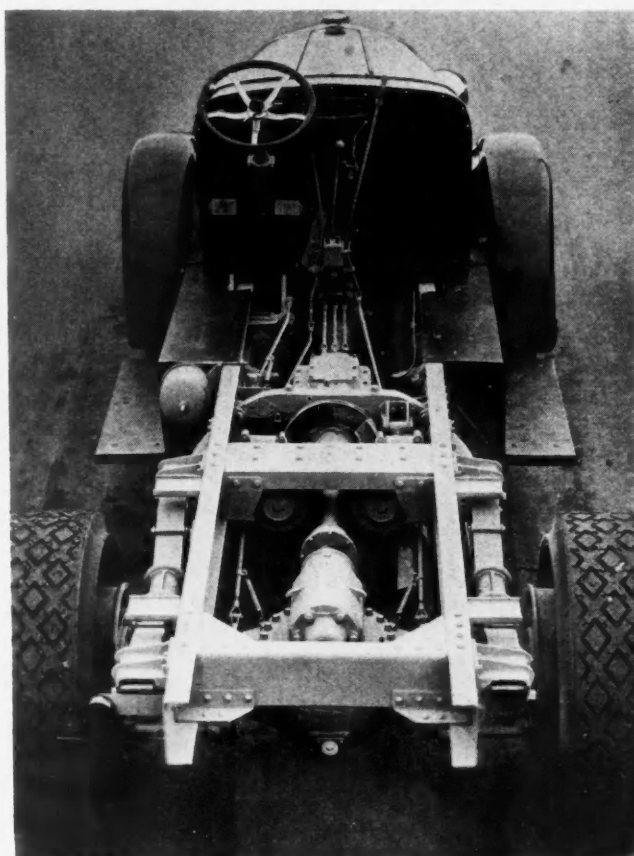
Standard wheelbase of the six-wheel unit is 212 in. which will accommodate

HAS SIX-WHEELER

Also Adds Four-Wheeler
Companion Model Which
Differs Only as to Rear End

Specifications of Brockway Models 50 and SW 40

Model	50	SW 40
Vehicle gross weight rating	30,000 lb.	40,000 lb.
Wheelbase, standard	185 in. 212 in.	212 in.
Tires, Front	Optional	Optional
Rear	Optional	Optional
Engine	Cont. 16-H	Cont. 16-H
Size	6-4¼ x 5¼	6-4¼ x 5¼
Generator	Leece Neville	Leece Neville
Voltage	12	12
Starter	Leece Neville	Leece Neville
Radiator, type	Tubular	Tubular
Clutch	Brown-Lipe	Brown-Lipe
Type	Disk	Disk
Transmission, make	Brown-Lipe	Brown-Lipe
Where mounted	Amidships	Amidships
Speeds	7	7
Propeller shaft	Double	Double
Front axle, make	Shuler	Shuler
Rear axle	Timken	Timken dual
Final drive	Worm	Worm
Drive and torque	Springs	Radius rods
Steering gear	Ross	Ross
Type	Cam and lever	Cam and lever
Service brakes, front wheel	Westinghouse	Optional
Type	Internal	
Method of operation	Air	
Service brakes, rear wheel	Westinghouse	Westinghouse
Type	Internal	4 rear wheels
Method of operation	Air	Air
Hand brake, make	Tru-Stop	Tru-Stop
Type	Disk	Disk
Frame width, rear	8 x 3 x 5/16 Reinforced	



Model 50 has a single Timken worm drive rear axle. Main and auxiliary rear springs are outside the frame side rails. Note braces on the channel cross-member at front of rear springs and on the rear cross member. A Tru-Stop disk hand brake is mounted in rear of a Brown-Lipe seven-speed transmission

a 17 to 18½-ft. body; the four-wheel chassis standard wheelbase is 185 in., the tractor model 146 in. and long chassis 212 in.

Major units, other than the rear axle, are Continental 16-H six-cylinder 4¼ by 5¼-in. L-head engine, Brown-Lipe multiple disk clutch and Brown-Lipe two-range seven-speed transmis-

sion, the latter mounted amidships.

Westinghouse air equipment actuates the brakes. Four-wheel brakes, operated by Westinghouse air equipment, are regularly supplied on both the four and six-wheel chassis. Front wheel brakes are supplied for front wheels of the six-wheeler, when desired, at extra cost.



Six-wheel unit equipped with pneumatic tires. Solids, high pressure pneumatic or balloons are available

FLAT RATE PRICE LIST

NUMBER 32

CHEVROLET TRUCK

Engine

1. Remove and replace engine. Does not include transfer of accessories
 - 4 cylinder \$10.00
 - 6 cylinder 12.00
3. Cylinder block renew. Includes fitting and aligning all bearings
 - 4 cylinder 48.00
 - 6 cylinder 57.00
5. Inspect internal condition of engine. Includes: Remove cylinder head, oil pan and connecting rod and piston assemblies, measure cylinder bores, pistons and crankpin and reassemble
 - 4 cylinder 8.40
 - 6 cylinder 10.05
6. Tune engine. Includes: Clean and adjust breaker points and spark plugs, clean sediment bulb and carburetor screen, retime ignition, adjust carburetor and fan belt
 - 4 cylinder 2.00
 - 6 cylinder 3.00
7. Engine support bolts, tighten all
 - 4 cylinder 1.00
 - 6 cylinder 1.25
8. Clean engine
 - 4 cylinder 1.50
 - 6 cylinder 2.25
9. Check engine compression, valve tappets, ignition system, fuel system, valve and ignition timing to locate engine miss
 - 4 cylinder 1.80
 - 6 cylinder 2.00

Cylinder Head and Oil Pan

10. Renew cylinder head gasket
 - 4 cylinder \$1.60
 - 6 cylinder 2.70
13. Remove oil pan, clean and replace
 - 4 cylinder 2.00
 - 6 cylinder 2.25

Oil Pump

15. Assembly, remove, inspect and replace
 - 4 cylinder \$4.00
 - 6 cylinder 4.70

Lubrication, Miscellaneous

17. Clean oil lines when oil pan is off
 - 4 cylinder \$1.25
 - 6 cylinder 1.80
19. Oil pressure regulator, adjust
 - 6 cylinder80
20. Oil filter, renew cartridge
 - 6 cylinder 1.00

Piston Pins and Rings

1. Rings, renew all, align and adjust connecting rods
 - 4 cylinder \$12.00
 - 6 cylinder 16.05
2. Rings, renew all, after connecting rods are out
 - 4 cylinder 1.60
 - 6 cylinder 2.40
3. Rings, renew all, and align rods
 - 4 cylinder 9.00
 - 6 cylinder 12.15
5. Piston pins, renew all and align rods only
 - 4 cylinder 9.80
 - 6 cylinder 13.35
6. Rings and pins, renew all and align rods only
 - 4 cylinder 11.40
 - 6 cylinder 15.75

NOTE

Both operations and prices for Chevrolet 4-cylinder engine given in this table are based upon those given in the Rapid Flat Rate and Repair Data Book, published by Chilton Class Journal Company. 6-cylinder engine prices have been compiled by the Book Department, Chilton Class Journal Company.

Additional prices for Chevrolet trucks will be given in an early issue.

7. Renew one piston pin, when rod is out
 - 4 cylinder \$.80
 - 6 cylinder80
8. Piston pins, renew all, align and adjust rods
 - 4 cylinder 12.80
 - 6 cylinder 17.25
9. Piston pins, renew all when rods are out
 - 4 cylinder 2.40
 - 6 cylinder 3.50
10. Rings and pins, renew all, align and adjust rods
 - 4 cylinder 14.40
 - 6 cylinder 19.65

Piston Assemblies

11. Piston, pin and ring assembly, renew one when connecting rod is out and cylinder head is off
 - 4 cylinder \$2.75
 - 6 cylinder 3.40
12. Hone or bore one cylinder, adjust and align rod and renew one oversize piston pin and ring assemblies, when connecting rod is out and cylinder head is off
 - 4 cylinder 5.75
 - 6 cylinder 5.75
13. Hone or bore all cylinders, align and adjust rods and renew oversize piston, pin and ring assemblies, when connecting rods are out and cylinder head is off
 - 4 cylinder 20.40
 - 6 cylinder 30.00
14. Hone or bore all cylinders, renew all oversize piston, pin and ring assemblies, align and adjust connecting rods
 - 4 cylinder 20.40
 - 6 cylinder 34.00

Rod Bearings

1. Remove and replace connecting rod and piston assemblies. Includes removal of oil pan and cylinder head and replacing parts, no other work included
 - 4 cylinder \$6.00
 - 6 cylinder 7.65
2. Align all connecting rods, when rods are out
 - 4 cylinder 1.40
 - 6 cylinder 2.10
3. Connecting rod bearings, adjust all, when pan is off. Includes removing shims but does not include scraping
 - 4 cylinder 4.00
 - 6 cylinder 5.40
4. Connecting rod bearings, adjust all. Includes operation 3
 - 4 cylinder 6.00
 - 6 cylinder 7.55
5. Connecting rod bearing, renew and align one and adjust others
 - 4 cylinder 9.00
 - 6 cylinder 11.70
- 5a. Renew and align each additional rod bearing
 - 4 cylinder 2.30
 - 6 cylinder 2.25
6. Renew all connecting rod bearings and align all connecting rods, when rods are out
 - 4 cylinder 6.20
 - 6 cylinder 11.10

7. Refit only, one connecting rod bearing, when oil pan is off. Includes adjustment plus reaming or scraping to get good fit. Includes removal and replacement of cylinder head. Does not include alignment of rod
 - 4 cylinder 3.55
 - 6 cylinder 5.15
8. Refit only, one connecting rod bearing when rod is out. Does not include alignment of rod
 - 4 cylinder 1.35
 - 6 cylinder 1.80

Main and Connecting Rod Bearings

1. Main bearings adjust all when pan is off
 - 4 cylinder \$3.25
 - 6 cylinder 3.75
2. Main and connecting rod bearings, adjust all, includes operation No. 1
 - 4 cylinder 9.25
 - 6 cylinder 11.00
3. Main and connecting rod bearings, adjust all, when oil pan is off
 - 4 cylinder 7.25
 - 6 cylinder 8.75
4. Main and connecting rod bearings, renew all and align rods when engine is out of frame
 - 4 cylinder 26.00
 - 6 cylinder 36.00
5. Main and connecting rod bearings, renew all and align rods when engine is dismantled
 - 4 cylinder 10.00
 - 6 cylinder 18.50
6. Main bearings only, renew all
 - 4 cylinder 31.00
 - 6 cylinder 39.75

Crankshaft

7. Regrind crankshaft, renew main and rod bearings and align rods
 - 4 cylinder \$49.00
 - 6 cylinder 63.50
8. Renew crankshaft, main and rod bearings, and align rods
 - 4 cylinder 37.00
 - 6 cylinder 48.00
9. Crankshaft end play, adjust
 - 6 cylinder 4.00
10. Crankshaft end play, adjust when front cover or oil pan is off
 - 6 cylinder 1.80

Timing Gears

1. Timing case cover, remove, clean and replace, including removing and replacing radiator
 - 4 cylinder \$4.00
 - 6 cylinder 4.00
3. Retime valves
 - 4 cylinder 5.00
 - 6 cylinder 5.00
4. Renew all gears
 - 4 cylinder 5.80
 - 6 cylinder 5.80
5. Gears, renew all when front cover is off
 - 4 cylinder 1.80
 - 6 cylinder 1.80
6. Renew cam gear after front cover is off
 - 4 cylinder 1.00
 - 6 cylinder 1.00

Camshafts

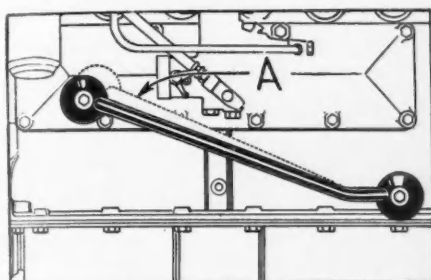
7. Remove and replace camshaft, includes removing and replacing radiator and timing case cover
 - 4 cylinder \$3.00
 - 6 cylinder 3.00

SERVICE HINTS

From Shop and Factory

\$5

Ideas for Service Hints from shop men are welcome. Tell all about the idea in shop terms and send drawing or photograph. Five dollars will be paid each successful contributor.



Oil level in the valve chamber of Model A Ford engines has been lowered by a change in the cover and the oil-return pipe. This change reduces oil consumption and prevents oil being thrown on the springs. New pipe and valve chamber are not interchangeable with former parts, as shown by dotted lines. When replacing oil pipes, two gaskets should be used, one at each end of the pipe.

AC Fuel Pump

A diaphragm *A* which is operated by eccentric *H* on the camshaft by means of rocker arm *D* and pull rod *F* moves fuel in this pump. Gasoline enters at *J* and is discharged at *P*. Suction valve is at *N* and discharge valve at *O*. The diaphragm is pulled down by rod *F* and is forced upward by spring *C*. When the carburetor float valve cuts off flow of gasoline, pressure in the discharge line holds the diaphragm down against spring *C* and no more gasoline is pumped until pressure is released. Spring *S* keeps rocker arm in contact with eccentric to prevent noise.

In case of major trouble with an AC pump the makers advise that it be taken to an AC authorized service station or United Motors Service branch. Minor service operations, however, may be undertaken in the shop. Within this classification are:

Loose glass bowl, dirty screen, loose valve plugs and dirty or warped valves. To fasten the bowl, tighten the thumb nut and make sure that the cork gasket is in place and is not broken. This should also be done when the bowl is removed for cleaning of screen. If valves are warped or dirty, take out plugs and valves. If damaged or



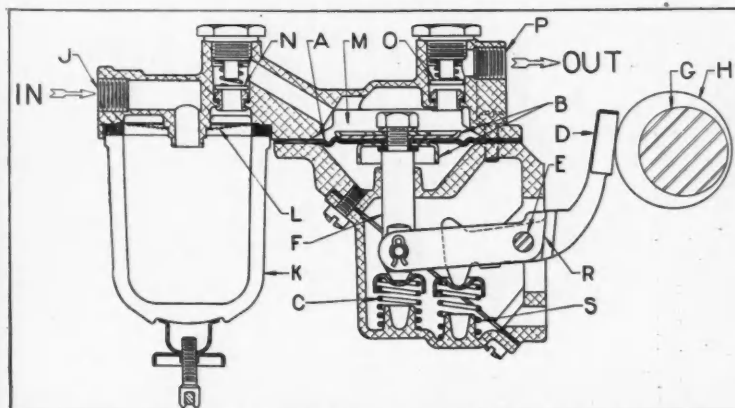
Welding torch mounted in fixture is used for cutting wheels for change-over to pneumatics. Top: Old rim removed. Bottom: New rim in place.

Welding Wheel Rims

In changing steel spoke wheels from solid to pneumatic tires an oxy-acetylene torch can be used to advantage for both cutting the old rim from the spokes and for welding the new rim in position. A jig to hold the torch and move it about a full circle, which has been used successfully for this job, is described by Linde Air Products Co.

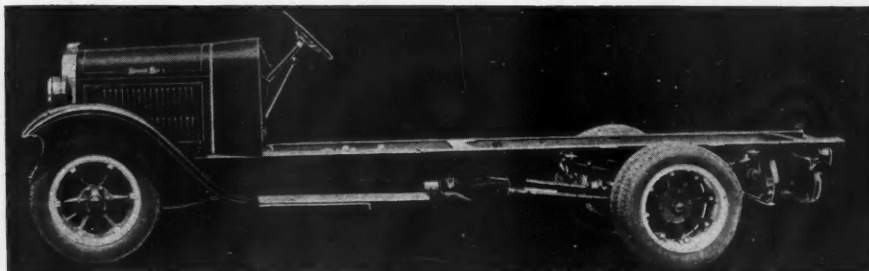
The base is an old brake drum, and it is supported on three legs, as shown. The truck wheel is placed on the support and a steel shaft is supported in the bearing races by two cones. The torch is carried on an arm which is revolved about the shaft.

Bronze welding is used for attaching the new rim to the spokes.



Cross-section of the AC fuel pump

STEWART BUILDERS



Specifications of Stewart 28X and 29X

Model	28X-1½	29X-2
Chassis price, list	\$1,495	\$1,695
Capacity, tonnage rating	1½	2
Body weight allowance	1400 lb.	1400 lb.
Weight, chassis lb.	3840 lb.	4188 lb.
Wheelbase, standard in.	136	145
optional, at extra cost	145, 160, 176	160, 176
Tires, front, standard	30 x 5	32 x 6
Optional, in.	32 x 6 or 34 x 7	34 x 7
rear, standard	30 x 5 dual	32 x 6 dual
optional	32 x 6 single or dual	32 x 6, 34 x 7 dual
Engine	Lycoming	Lycoming
number of cylinders	6	6
size of cylinders	3¼ x 4½	3¼ x 4½
displacement	224	224
horsepower	61	61
valve arrangement	L	L
number of main bearings	4	4
piston material	cast iron	cast iron
compression ratio	4.75:1	4.75:1
suspension	3 point	3 point
type of mounting	rubber at rear	rubber at rear
Oiling system	pressure	pressure
Carburetor, make	Stromberg	Stromberg
Fuel feed	vacuum	vacuum
Ignition, make	Delco	Delco
Starter, make	Delco	Delco
Gasoline tank location	frame	frame
capacity	20 gal.	20 gal.
Radiator, type	cellular	cellular
Temperature control	Thermostat	Thermostat
Clutch, make and model	Fuller	Fuller
type	multiple disk	multiple disk
Transmission, make	Fuller	Fuller
where mounted	4-unit	4-unit
number speeds	4-unit	4-unit
Universals, make	Spicer	Spicer
type	metal	metal
Propeller shaft	double	double
Front axle, make	Clark	Clark
Rear axle, make	Clark	Clark
final drive	bevel	bevel
type	semi-float-ing	full-float-ing
ratio, standard	6.37:1	6.37:1
ratio, optional	7.28:1	7.28:1
Drive	radius rods	radius rods
Steering gear, make	Ross	Ross
Service brakes	Bendix	Bendix
	2-shoe internal	2-shoe internal
	4 wheel	4 wheel
Size drum, front	14 x 2 in.	14 x 2 in.
rear	16 x 2½ in.	16 x 2½ in.
Hand brake, location	transmission	transmission
size drum	4 x 8½	4 x 8½
Springs, front	38½ x 2¼	38½ x 2¼
number leaves	11	10
Springs, rear	50 x 2½	50 x 3
number leaves	13	12
Auxiliary springs	30 x 2½	34 x 3
number leaves	6	6
Frame, depth		
standard wheelbase	6 in.	7½ in.
long wheelbase	7½ in.	
overall length	197¼ in. on 136 W.B.	213¾ in. on 145 W.B.
width, rear	32 in.	32 in.
Wheels, type	cast steel	cast steel
Chassis lubrication	Alemite	Alemite
Length, dash to center of rear axle	93 13/16 in. on 136 W.B.	102 13/16 in. on 145 W.B.
Length, dash to end of frame	137 13/16 in. on 136 W.B.	153 13/16 in. on 145 W.B.

Radius rods and helper springs are used in rear axle assemblies of both the 1½ and 2-ton models

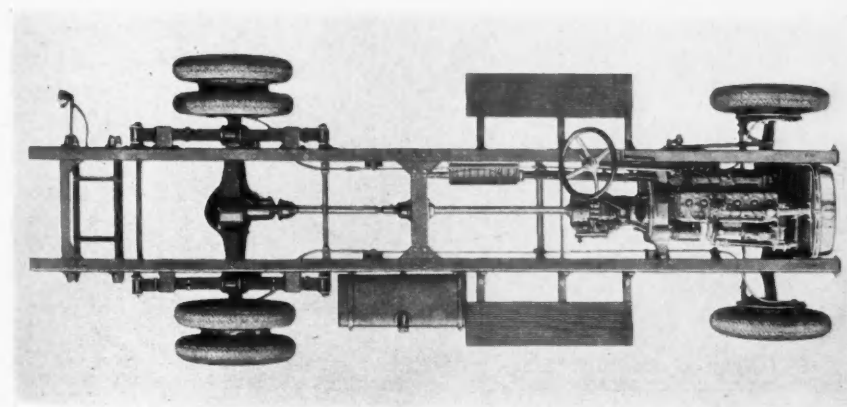
USE of aluminum for body making is increasing and developments in this field are being watched with interest. Up to the present aluminum employed in truck bodies has been incorporated in custom jobs designed to meet special needs of purchasers. By adopting aluminum as material for all outside parts of a new de luxe panel body the Stewart Motor Corp., Buffalo, N. Y., has taken the lead in putting this type of construction on a factory production basis. The new bodies are offered in two sizes for mounting on Stewart ¾ to 1¼-ton trucks.

Coincident with announcement of the aluminum bodies the Stewart company introduces two new six-cylinder trucks, one of 1½-ton capacity, listing at \$1,495, and the other of 2-ton rating, listing at \$1,695. Both models are equipped with Bendix two-shoe four-wheel brakes. Four wheelbases are available on the 1½-ton unit and three on the



Above: The aluminum de luxe panel body by Stewart is designed for high class retail service

At left: Driver's compartment of de luxe delivery. Filler cap and gage on gasoline tank are covered by the door



larger model of 2-ton capacity rating. The body was designed by Stewart engineers for retail establishments desiring a vehicle of distinctive appear-

Top view of 2-ton chassis model 29X. Gasoline tank is mounted at side. A wide center cross member supports the center bearing of the propeller shaft

*The Commercial Car Journal
and Operation & Maintenance*

BODY

*Is First Chassis
Maker to Work Out
Job Along New
Trend. Also devel-
ops Two 1½ and
2-Ton Chassis*

ance and of advertising value. Curved roof and sides, doors with rounded upper corners, integral cowl, and panels brought down to running boards give this effect.

All outside parts of the body are covered with aluminum, the frame being of hard oak and ash. Interior of the body is sealed and is equipped with two dome lights. The driver's seat is permanent and the removable auxiliary seat, next to the driver, has a lazy back.

Two sizes of the body are offered, 7 ft. of loading space for the ¾-ton model and 8 ft. for the 1 and 1½-ton chassis. The larger body is 52 in. wide and 52 in. high, and has space 46 in. wide between wheelhouses. There are two rear doors 22 in. wide by 48 in. high.

Standard equipment includes saddle lamps, rear view mirror and windshield. Bumpers and rear bumperettes are supplied at extra cost. Price for the 8-ft. body is \$800 and \$780 for the shorter body.

Both truck models embody Lycoming engines, 3¼ by 4½ in., Fuller clutches and four-speed transmissions, and Clark axles. Rear axle of the 1½-ton chassis is a bevel semi-floating model and that of the 2-tonner a bevel gear full-floating. New type two-shoe Bendix internal four-wheel brakes are used on both models and they are actuated by flexible cables at the four wheels. Only one brake cross-shaft is incorporated in the assembly.

Detailed specifications are given in the accompanying table on the page opposite.

August, 1929



NEW TRUCK SALES

Complete Figures for May, 1929; Totals for

	Acme	American La France	Atterbury	Autocar	Brockway-Indiana	Chevrolet	Diamond T	Dodge Bros.	Fargo	Federal	Ford	G. M. C.	Gotfredson	International	Larabee	Mack	Moreland	Pierce-Arrow	Relay	Reo	Republic	Rugby	Schacht	Selden	Sterling	Stewart	Studebaker	Whippet	White	Willis-Knight	Total Sales by States Including Miscellaneous		
ALA.... May					1	224		20	1	3	240	7		20		2				3								1	2		1	527	
† 5 mo.					1	951		76	2	9	850	35		118		6			1	17		1					1	9	14	1	2,100		
ARIZ.... May						93		28	1		173	8		19		1				8		2						5	2	3		345	
5 mo.						352		125	6		643	55		88		4	2			23		7				3	25	8	8	5	1,360		
ARK.... May					4	193	1	22	1	2	317	5		46						12							2	1	4	1	612		
June					1	132		8			140	4		27						3							4	4	4		324		
5 mo.					5	865	3	109	3	7	1,402	36		240		2				41		2				4	15	26	1	2,776			
CAL.... May	1	1		16		517	4	207	8	29	1,447	85	3	69		42	48			121	4	26			23	8	19	5	40	1	2,835		
5 mo.	11	5		65	2	2,291	9	1,097	38	112	6,759	445	15	264		190	284	3	2	524	16	76			131	41	84	43	189	8	13,276		
COLO.... May					1	197		38	2	1	251	19		27		3	1			4	1	1						1	1	7	1	558	
5 mo.					1	690		196	7	9	881	126	1	167		10	1		1	30	3	6					7	5	24	4	2,177		
CONN.... May				10	15	222	4	86	5	6	265	34		41	4	39			1	2	71		4	2		2	23	8	6	7	3	875	
5 mo.				35	40	831	12	316	30	22	985	128		146	8	142			10	7	239	2	9	3	1	7	67	32	25	34	8	3,176	
DEL.... May				2		48		12			80	12		14					1	7	1								2			180	
June				3		46		3	1	1	80	9		6					3	3					1	1	1					156	
5 mo.				7	1	212		28			281	38		53		4			6	24	2	3						1	11		672		
D. C.... May				1	5	61	6	15		2	138	9		4		11			1	3	6				2	10		2	6			282	
5 mo.				5	11	212	27	38		2	458	29		19		28			1	5	17				4	15		6	14			897	
FLA.... May					4	148		13	1		357	2		14		1				6								3	3			552	
5 mo.					11	700	5	48	2	2	1,145	22		67		13			5	28	1						3	15	16			2,084	
GA.... May				4	6	292		32	1	1	347	4		30		7			1	8							1	2	8	1		747	
5 mo.				4	32	1,258	1	108	2	5	1,287	24		72		18			1	15							4	17	49	1		2,902	
IDAHO... May						62		10			33	5		10		2				6		3					1		2			136	
5 mo.						203		41			201	14		46		11	10			15	1	10					1		8	1		570	
ILL.... May	2		6	12	788	88	125	6	15	1,089	51			204		29			3	6	53	1	3			5	2	2	14	19	2	2,625	
June			5	10	447	65	96	14	3	801	33			115		37			1	1	34	4			4	1	1	18	17	1		1,753	
5 mo.	10		47	79	3,644	566	822	59	84	5,168	423	42	1,248	169		37			9	36	295	10	29		53	18	17	92	132	18		13,658	
IND.... May				4	16	392	5	86	1	5	517	44		68		3			12	32						10	7	14	10	1		1,232	
5 mo.				9	105	2,224	35	405	13	37	2,810	236		411		11			1	20	184		6	2		41	40	64	43	4		6,794	
IOWA... May				7	557	1	44	8	3	372	23			157		3			1	51	2	4					3	7	3			1,256	
5 mo.				1	21	2,271	7	238	32	12	1,431	77		660		26			9	137	3	13				13	29	15	3			5,018	
KAN.... May				4	408	1	60	5			462	19		98						20	2	1					1	6	5	1		1,103	
June				2	198	2	35	1	2		227	16		53		2				8	1	1				1	7	4	3	1		566	
5 mo.				7	1,535	13	281	18	2		1,521	124		411		4				75	4	2		1			14	43	19	8		4,109	
KY.... May				1	1	210	5	31	4	1	198	28		44		6			2	25			4				3	6	4	1		585	
5 mo.				7	18	888	19	159	12	1	897	115		207		23			2	9	80	2	4	11		1	14	28	22	2		2,540	
LA.... May				2	160		14	1			283	16		56		2			1	3								6	3	1		548	
5 mo.				3	19	810	13	102	3	5	1,245	56		172		11			1	13								13	25	2		2,496	
ME.... May				1	1	313	3	47	5		356	15		15		3				36		2			1	1	5	1				806	
5 mo.				4	1	729	7	110	7		894	31		31		5				82		5			1		9	14	1	1		1,933	
MD.... May				19	7	233	16	49	2	8	295	34		52		24			2	21	1	1			11	5	2	3	18	1		810	
June	1			8	10	155	7	48	3	5	267	9		52		21			1	23	2	1			6	1	4	3	15			653	
5 mo.	3	1		53	13	821	40	179	4	24	1,117	113		137		108			2	6	99	6	2		1	23	22	5	10	64	1	2,891	
MASS... May		4		41	15	428	17	165	24	19	758	81		109	7	68			3	2	103		2		3	27	10	3	13	28	4		1,961
5 mo.	3	17		148	85	1,629	49	580	84	59	3,283	357	1	358	20	219			10	3	134	51	8	4	9	71	47	22	49	130	11		7,766
MICH... May	6			10	1	910	5	129	31	26	1,494	124	4	152		23			1	110		1					5	21	10	3		3,099	
5 mo.	29			28	23	3,546	36	521	85	101	5,672	405	17	505		58			13	4	394	6	19	1		26	87	55	16			11,770	
MINN... May						508	3	53	2	8	689	24		108		2			1	37		1					2	10	6	3		1,459	
5 mo.						1,456	7	183	6	28	2,110	99		360		15			1	4	122		7				14	51	30	7		4,508	
MISS... May					2	198		11	2		285	4		44						4												550	
5 mo.					7	772		44	3		777	16		100						18										2		1,741	
MO.... May				4	22	426	19	72	8	12	586	36		69		17			5	29		4			3	1	4	14	8	3		1,347	
5 mo.				20	71	2,689	148	503	25	84	2,960	300		553		88			33	3	165	10	17		14	5	30	111	56	4		8,000	
MONT... May						99		18	1	1	196	12		34		3			2	10		2						6	4	1		391	
5 mo.				3		517		146	4	9	965	63		279		6			2	2	68	2	11				3	11	13	10		2,126	

† June not included in 5 mo. totals.

Figures in this table are compiled by R. L. Polk & Company, of Detroit, except Illinois, which is compiled by the Automobile Sales Record Corporation, of Trenton. Readers desiring

BY MAKES AND STATES

for
Five Months, and Partial Reports for June, 1929

Total Sales by
States Including
Miscellaneous

527
2,100
345
1,360
612
324
2,776
2,835
13,276
558
2,177
875
3,176
180
156
672
282
897
552
2,084
747
2,902
136
570
2,625
1,753
13,658
1,232
6,734
1,256
5,018
1,103
566
4,109
585
2,540
548
2,496
806
1,933
810
653
2,891
1,961
7,766
3,099
11,770
1,459
4,508
550
1,741
1,347
8,000
391
2,126

	Acme	American La France	Atterbury	Autocar	Brockway-Indiana	Chevrolet	Diamond T	Dodge Bros.	Fargo	Federal	Ford	G. M. C.	Godfredson	International	Larabee	Mack	Moreland	Pierce-Arrow	Relay	Reo	Republic	Rugby	Schacht	Selden	Sterling	Stewart	Studebaker	Whippet	White	Willie-Knight	Total Sales by States Including Miscellaneous	
NEBR... May					2	277	2	20			284	30		55		3				10							2	6	4		695	
5 mo.					13	1,336	6	164	2	1	1,289	130	1	366		16				54		5				13	14	17	2	3,448		
NEV.... May						15		16	2		36	4		1			1			2							1		1		82	
5 mo.						94		80	4		189	11		13		2	8			4					1		2		6	1	428	
N. H.... May					10	136	1	24	3		152	12		14		5				10		1				3	2	1	1		375	
5 mo.				1	15	379	2	59	4	3	454	33		26		10		1		35		1				10	4	11	2	2	1,054	
N. J.... May	1	5		25	17	440	5	79	9	14	565	48	2	46	1	46		1	3	56	2	5		2	10	7	12	9	25	6	1,488	
5 mo.	4	21		99	100	2,060	34	352	57	79	2,699	240	7	191	4	293		42	10	254	4	21	9	8	39	29	55	77	136	20	7,263	
N. M.... May					1	58		6			45	6		10								1							1	4	132	
5 mo.					3	244		51	1	3	215	21		50						10		2							4	8	613	
N. Y.... May	7	96	12	84	208	1,332	76	351	54	42	1,998	170	1	305	39	200		32	12	192	2	8	7	21	16	98	16	44	127	12	5,653	
5 mo.	24	138	54	268	756	5,417	261	1,413	225	124	7,381	611	2	911	90	754		111	44	669	5	41	15	64	76	338	63	182	385	18	20,839	
N. C.... May					2	306		40	2	3	285	16		16		4				7		3				2	2			7	699	
June					2	303		31	2	3	362	15		16		1				4	1	2				1	1	3	3	755		
5 mo.	14			11	10	1,743		257	6	9	1,625	114		99		34				36	4	11			5	8	25	20	1	4,074		
N. D.... May					155	1	20				156	13		101				1	1	9		4					1	5		2	471	
5 mo.					513	1	59			3	581	52		420				2	1	29		11					2	15	4	6	1,711	
OHIO... May	6			29	31	744	15	145	18	24	1,183	76		202		44		7	4	73	7	4	23	1	4	6	3	40	69	18	2,817	
5 mo.	23			71	91	3,520	63	596	62	78	4,549	289	7	646		129		26	18	323	14	15	56	7	9	32	30	189	244	38	11,252	
OKLA... May				3	2	409		38	4	7	505	19		102		1				14	1			3			2	6	8	3	1,131	
5 mo.				3	28	1,678	18	328	25	37	2,089	106		412		27		1	2	80	2	2		15		8	13	53	38	4	4,983	
ORE.... May					146		28	2	7	256	28			30		13	3			26		3				1		1		14	577	
5 mo.					596	1	149	13	27	1,132	107			104		30	11			67	4	10					12	7	48		2,347	
PA..... May	12	1	4	58	35	866	24	255	24	16	1,481	112	2	158	5	95		5	11	145	4	11		1	38	31	10	40	83	4	3,585	
5 mo.	34	13	13	207	198	3,638	100	1,069	121	61	5,903	459	26	648	13	342		20	64	515	34	38		6	127	133	62	169	265	18	14,502	
R. I.... May		1		6	2	94		30	8	15	96	26		7		11		1		23			2		6	3	2	2	3		339	
5 mo.		2		32	4	310	1	134	16	27	363	71		37		29		3		102		3	2		6	16	3	7	14	1	1,190	
S. C.... May					203		18	2	9	253	3			11		1				2	1									3	507	
June					173		13	3	4	171	6			11		8				2									2	1	397	
5 mo.	1				934		92	5	24	870	44			81		2				10	1	2				2	1	4	7		2,084	
S. D.... May					131	1	18	4			137	10		84						18		3					2	1		1	412	
5 mo.					1	450	7	77	5	1	516	41	1	337		6				56		10					2	7	1	6	1,530	
TENN... May					1	267	6	21		10	194	8		24		6				6		1						1		3	550	
5 mo.					4	1,115	8	116	3	31	758	113		83		25				42	2	1					11	7	20	2	2,349	
TEXAS... May		3		4	2	1,066		84	1	6	1,173	46		182		1			2	34		3					2	5	9	16	2,649	
5 mo.		5		33	51	5,027	27	521	32	26	5,162	291		1,019		49		3	23	194		22				6	29	53	99	7	12,728	
UTAH... May					52		8	1			86	1		5		1				6		4								2	168	
June					118		29	2	2	248	3			22		10	1			12		2							3	7	463	
5 mo.	1				229		64	3		418	11			46		13	2			15		8						4	2	13	833	
VT..... May					10	87		38	5	5	141	8		56	4	3				16						6				3	4	389
5 mo.					11	248		82	12	15	400	35		125	8	7				50		1				9	7	4	9	5	1,031	
VA..... May				6	7	427	1	42	1	7	399	20		64		3			3	12	4	3								6		1,021
June				3	8	339	2	23		2	356	9		24		2				1	12								6	6		794
5 mo.				15	28	1,501	5	170	3	31	1,614	79		185		23		1	4	66	20	10				13	8	21	38		3,840	
WASH... May					195		44	2	2	370	37			37		3	9			19	2	6						2	5	21		777
5 mo.					788		214	14	14	1,624	138			160		22	17	3	1	106	4	21						11	17	72	1	3,335
W. VA... May				1	5	208	4	42		2	226	11		50					4	21	1	1					2	2		6	3	589
5 mo.	1			1	16	728	13	126	7	5	830	61		174					7	68	1	4	1			7	5	5	14	3	2,089	
WIS.... May					1	627	36	84	8	15	1,047	48		161		8		1	3	58	1	7			16	8	8	29	14	4	2,216	
June	1	1			3	509	28	76	6	6	773	46		113		4			7	41					11	7	5	15	7	2	1,677	
5 mo.				1	1	1,984	105	258	24	54	3,076	145		430		22	1	8	49	108	4	12			58	36	24	52	37	13	6,620	
WYOM... May					37		9	2			68			9		1				2								3			132	
5 mo.					118		78	2			234	8		35		2	1			8		2							5		500	
TOTAL... May	33	113	16	335	462	15,965	350	2,847	272	326	22,364	1,453	12	3,234	60	740	62	66	76	1,547	37	125	38	31	165	242	149	353	621	86	52,875	
Sales by Makes.	145	215	67	1,182	1,887	66,746	1,649	12,964	1,091	1,267	89,713	6,577	120	13,310	143	3,008	337	322	336	5,740	218	490	104	112	622	904	737	1,671	2,500	266	217,923	
TOTAL... 5 mo.	33	113	16	335	462	15,965	350	2,847	272	326	22,364	1,453	12	3,234	60	740	62	66	76	1,547	37	125	38	31	165	242	149	353	621	86	52,875	
Sales by Makes.	145	215	67	1,182	1,887	66,746	1,649	12,964	1,091	1,267	89,713	6,577	120	13,310	143																	

Illinois,
desiring

which is compiled by the Robinson's Advertising Service of Springfield; and New Jersey,
town and county lists of owners in any section may address any of these three companies.



OFFERS

Optional Wheelbases Available on New Models Equipped With 6-Cylinder Engines and Lockheed Hydraulic Brakes

A NEW line of trucks, comprising seven models which are equipped with six-cylinder engines, pneumatic tires and hydraulic four-wheel brakes, is offered by Hahn Motor Truck Corp., Allentown, Pa. Each model is given a range in capacity rating and the higher rating for one model is the lower rating for the next larger, except in one instance. This arrangement gives a complete coverage of tonnage ratings from 1500 lb. to 5 tons and total maximum vehicle gross weight ratings extending from 6000 to 20,000 lb.

Many options are given in specifications to meet in-

Specifications of New Hahn Models

Model	7-H	17-H	37-H	39-H	47-HB	47-HD	67-H
Chassis price, list	\$1,098	\$1,430	\$1,950	\$2,898	\$3,700	\$3,900	\$4,950
Capacity, tonnage rating	¾-1	1-1½	2-2½	2½-3	3-3½	3½-4	4-5
Body weight allowance	900	900	950	1200	1350	1350	2000
Maximum weight (all)	6000	7650	10,550	13,000	15,250	16,850	20,000
Weight, chassis, lb.	3100	3750	4600	5800	6900	7500	8850
Wheelbase, standard in.	124 in.	142 in.	153 in.	164 in.	151 in.	151 in.	151 in.
options			164 177 183	164 190½	164 184	164 184	164 184 198
Tires, front, standard in.	30 x 5	30 x 5	30 x 5	32 x 6	34 x 7	34 x 7	36 x 8
Tires, rear, standard	30 x 5	30 x 5	30 x 5	32 x 6	36 x 8	36 x 8	36 x 8
Engine, make and model	Con. 29-L	Con. 18-E	Con. 16-C	Con. 16-R	Con. 18-R	Con. 18-R	Con. 21-R
Number of cylinders	6-2½ x 4½	6-3½ x 4	6-3½ x 4½	6-4 x 4½	6-4 x 4½	6-4 x 4½	6-4½ x 4½
valve arrangement	L-head	L-head	L-head	valve in head	valve in head	valve in head	valve in head
number of main bearings	4	7	7	7	7	7	7
diameter of main bearings	2½	2½	2½	2½	2½	2½	2½
suspension	3 point	4 point	4 point	3 point	3 point	3 point	3 point
Oiling system	pressure	pressure	pressure	pressure	pressure	pressure	pressure
Front end drive	gear	gear	gear	chain	chain	chain	chain
Gasoline tank, location	under seat	under seat	under seat	under seat	under seat	under seat	under seat
capacity, gal.	20	20	35	35	35	35	35
Radiator, make	G. & O.	Chicago	Chicago	Chicago	Chicago	Chicago	Chicago
type	tubular	tubular	tubular	tubular	tubular	tubular	tubular
Clutch, make and model	B & B 640	BL 20	BL 35	BL 50	BL 61	BL 61	BL 65
Transmission, make and model	Warner AST3264J	BL 20	BL 35	BL 35	BL 35	BL 35	BL 55
where mounted	unit	unit	unit	unit	unit	unit	amidship
speeds	3	4	4	4	4	4	7
Universals, make	Spicer	Spicer	Spicer	Spicer	Spicer	Spicer	Spicer
type	metal	metal	metal	metal	metal	metal	metal
Propeller shaft	single	double	double	double	double	double	double
Front axle, make	Timken	Timken	Timken	Timken	Timken	Timken	Timken
Rear axle, make and model	Timken 5200H	Timken 5200H	Timken 5400H	Timken 5800H	Timken 5600H	Wisconsin 8817	Wisconsin 1500
final drive	bevel	bevel	bevel	bevel	bevel	dual red.	dual red.
type	full fl.	full fl.	full fl.	full fl.	full fl.	full fl.	full fl.
ratio, standard	5.8	5.8	5 5/6	6 1/6	7.8	7.8	10.8
ratio, optional	—	—	6 4/5	—	6 5/6	6 5/6	8.18
Steering gear, make	Ross	Ross	Ross	Ross	Ross	Ross	Ross
Service brake	4-wheel	Lockheed internal hydraulic	16 x 2½	16 x 2½	16 x 2½	16 x 2½	17¼ x 3
size of drum, front	14 x 1½	14 x 1½	16 x 2½	16 x 2½	17¼ x 4	17¼ x 4	17¼ x 4
size of drum, rear	16 x 2½	16 x 2½	BL	BL	Tru-Stop	Tru-Stop	Tru-Stop
Hand brake, make	Warner	Warner	Warner	Warner	Warner	Warner	Warner
type	drum	drum	drum	drum	disk	disk	disk
diameter	8 in.	8 in.	8 in.	14 in.	14 in.	14 in.	14 in.
Springs, front	41 x 2½	41 x 2½	41 x 2½	41 x 2½	40 x 2½	40 x 2½	40 x 2½
number of leaves	8	10	11	11	10	10	10
Springs, rear	50 x 2½	50 x 2½	50 x 2½	50 x 2½	56 x 3	56 x 3	56 x 3½
number of leaves	10	11	14	14	14	14	14
Spring mounting	sliding block	sliding block	sliding block	sliding block	shackle	shackle	shackle
Frame, depth	5 1/16	5¼	5¼	7	7	7	8
flange	2½	2¼	3½	3½	3½	3½	3½
channel or I-beam	channel	channel	channel	channel	channel	channel	channel
overall length	200 in.	200 in.	220 in.	240 in.	210 in.	210 in.	210 in.
Wheels, make	Van	Van	Van	Van	Van	Van	Budd
Chassis lubrication, make	Alemite	Alemite	Alemite	Alemite	Alemite	Alemite	Alemite
Length, dash to center of rear axle	102 in.	115 in.	122 in.	127 in.	120½ in.	120½ in.	120½ in.
Length, dash to end of frame	135 in.	170 in.	170 in.	169 in.	160 in.	160 in.	160 in.

NEW 7-UNIT LINE

dividual requirements, among them being wheelbase and tire equipment.

Continental engines are used in all models, the 2 $\frac{7}{8}$ by 4 $\frac{3}{4}$ in. 29-L in truck model 7-H, the 3 $\frac{3}{8}$ by 4 in. 18 E engine in truck model 17-H and 3 $\frac{3}{8}$ by 4 $\frac{3}{8}$ in. 16-C engine in model 37-H. The four larger models embody the R-series overhead valve engines, which are interchangeable in chassis mounting. Zenith carburetors and Autolite starter, generator and distributor are used throughout.

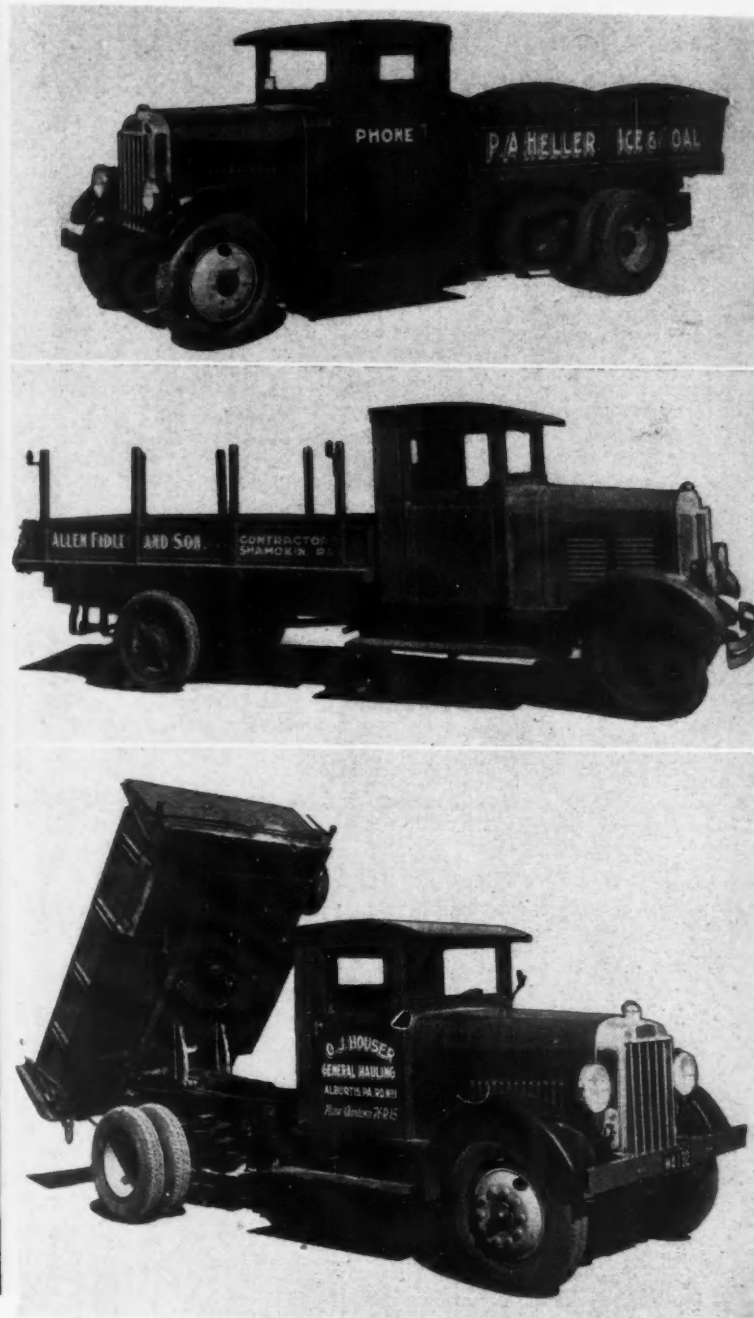
Full-floating type rear axles are standard in the line, the two larger models incorporating Wisconsin double-reduction axles and the others having Timken bevels. Radius rods are used in all cases. Model 7-H has a Warner 3-speed transmission, five next larger models use Brown-Lipe four-speed units, while the largest model incorporates a seven-speed amidships mounted Brown-Lipe.

Plate clutches are common to the entire line, that in 7-H being a Borg & Beck and the remaining Brown-Lipe. Other units included in all models are: Timken front axles, Spicer universals, Autolite starters, generators and ignition distributors, Zenith carburetors, Stewart-Warner vacuum tanks, Ross cam and lever steering gears, and Lockheed hydraulic four-wheel brakes.

A transmission mounted drum type hand brake is employed on models 7-H, 17-H and 37-H and Tru-Stop disk brakes, made by American Cable Co., are used on the four remaining truck models. Service brakes on models 39-H, 47-HB, 47-HD and 67-H are actuated by a vacuum amplifier.

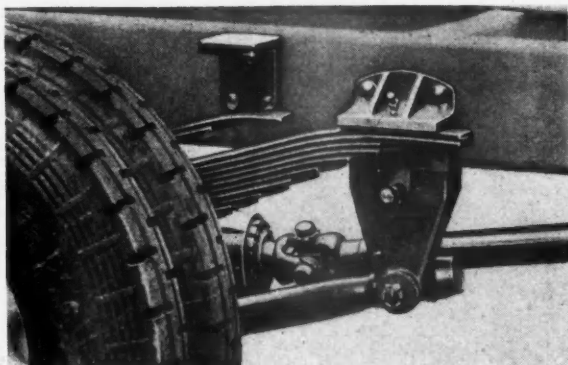
Sliding contact spring end mountings instead of shackles are used on rear springs of models up to and in-

(Turn to page 60, please)



Above: An enclosed cab with one-piece windshield and wide doors is available for the Hahn line

At left: Sliding contact spring mounting and auxiliary springs as used on model 39H. As the spring deflects the point of support of load moves toward center of the spring, giving greater stiffness under load

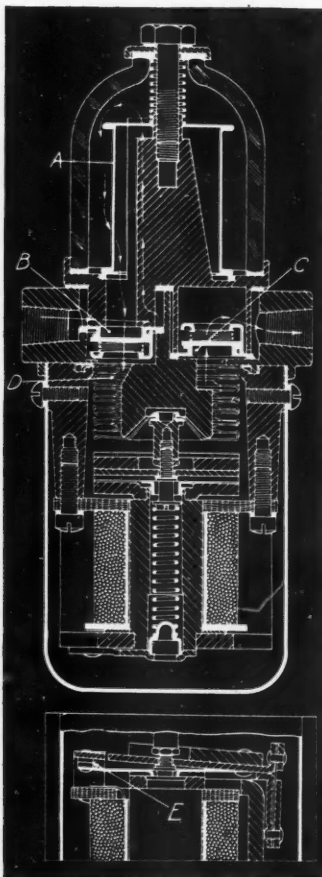
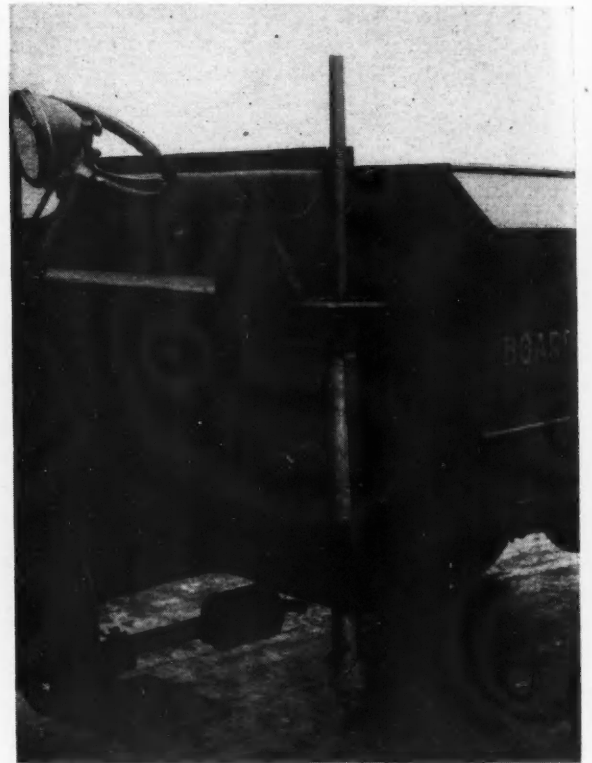


POWER WATER GATE CLOSER

BECAUSE of the ingenuity of the engineering department of the Standard Motor Truck Co. two 2-ton Fisher Mercantile Express chassis were recently sold to the Water Commission of the City of Detroit. The city engineers had designed an elaborate mechanism to be operated from a power take-off for closing water gates. This service was formerly performed by hand and required the use of several men, taking several hours. Before making their own design various truck manufacturers were asked to give the matter attention. The mechanical gate closing apparatus conceived by the Standard Truck Co. was finally accepted as being simpler and less expensive to construct and more economical to operate.

As shown by the illustration the device is compact and conveniently located in the corner formed by the driver's seat and the front of the body. The proposition proved to be successful and gates can now be closed in a few minutes.

Power to operate the gate closer is taken from the horizontal shaft of the power take-off through bevel gears to a vertical shaft. From the latter shaft it is transmitted by chain to another vertical shaft mounted outside of the frame. The final connection is also by chain to a large gear keyed to the gate-closing shaft. By means of a hand screw the locking shaft may be raised or lowered through the driving gear. The shaft and gear is held in position by a sturdy U-brace strapped and bolted to the frame. A guard angle also circles the gear and follows the outside course of the chain. Another brace just below the hand wheel assures rigidity and perpendicular alignment



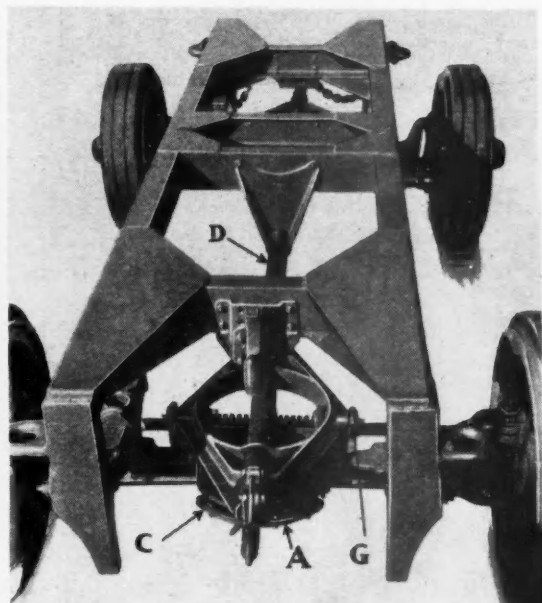
Sectional drawing of the Autopulse showing assembly and course the fuel takes upon passing through the pump. Gasoline enters the inlet port passes through the screen A, and inlet valve B into bellows D, and makes its exit through outlet valve C. Contacts are indicated by E

AUTOPULSE FUEL PUMP

THE 1929 Autopulse electric fuel pump, made by the Autopulse Corp., Detroit, embodies a number of improvements over previous models including a doubled pumping capacity, a positive spring suspension, a frictionless bearing, a rigid and practically noiseless armature and bakelite valves. Lifting fuel 30 in. on a 1-lb. spring adjustment with unrestricted outlet, this new model will deliver approximately 16 gal. per hour and on a 2-lb. spring adjustment, approximately 20 gal. per hour. Current consumption with a 1-lb. spring adjustment is .06 amp. and with a 2-lb. adjustment, .09 amp. on a 6-volt pump.

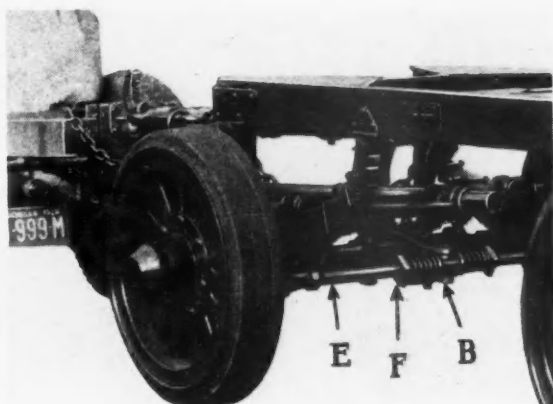
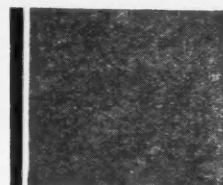
The armature bearing spring has a positive spring suspension. The bearing is entirely frictionless and more reliable than the ball bearing suspension used on former models. Valve seats are made of Bakelite to insure better wearing and seating qualities. The new bellows are larger in diameter and of greater length than those formerly used. All pumps are calibrated for 1 - lb. pressure, but pressure may be increased if required without recalibration. Design is such that either single or two-wire connections can be furnished.

DETROIT TRAILER HAS KNUCKLE STEER



Model K Employs Separate Pole for Steering

Close-up views showing steering mechanism of the Detroit Trailer Model K. The steering assembly consists of a sector member (A) attached to the center of the axle, and upper and lower steering arm (B), which are united at the front and are pivoted and slide on the sector, and a diamond-shaped rocking beam (C), 32 in. long, which guides the assembly and provides for the vertical motion of the steering pole (D). The steering arms jut beyond the axle and are attached both below and above the tie-rod (E) to a block (F), which has a sliding action on the tie-rod and presses against springs on each side. Severe shock as well as normal vibration are taken up by these springs. Vertical movement of the steering pole is taken up by the yoke pivotal bearings (G), which are 16 in. apart and 2½ in. long, bronze bushed

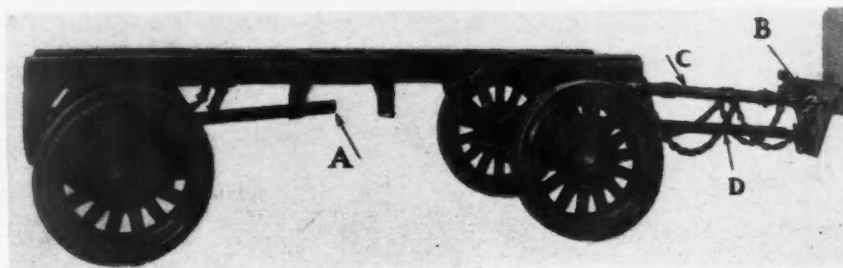


Specifications of the Model K Line

	3-Ton	5-Ton	7-Ton	10-Ton
Wheelbase	127	127	127	127
Tread	60	60	60	60
Radius	29	29	29	29
Weight	3600	3800	4000	4200
Frame	5 in.	5 in.	5 in.	5 in.
Wheels	steel	steel	steel	steel
Tires	36 x 6	36 x 8	36 x 10	36 x 12
Springs	40 x 3 in.	40 x 3 in.	40 x 3 in.	40 x 3 in.
Leaves	9	12	14	16
Height	36 in.	27 in.	38 in.	39 in.

THE Detroit Trailer & Machine Co., Detroit, Mich., is building a line of steering knuckle type, four-wheel trailers, known as the K series, which pulls from the frame and steers from the axle. Trailers in this series are made in 3, 5, 7 and 10-ton capacities and steer from either end.

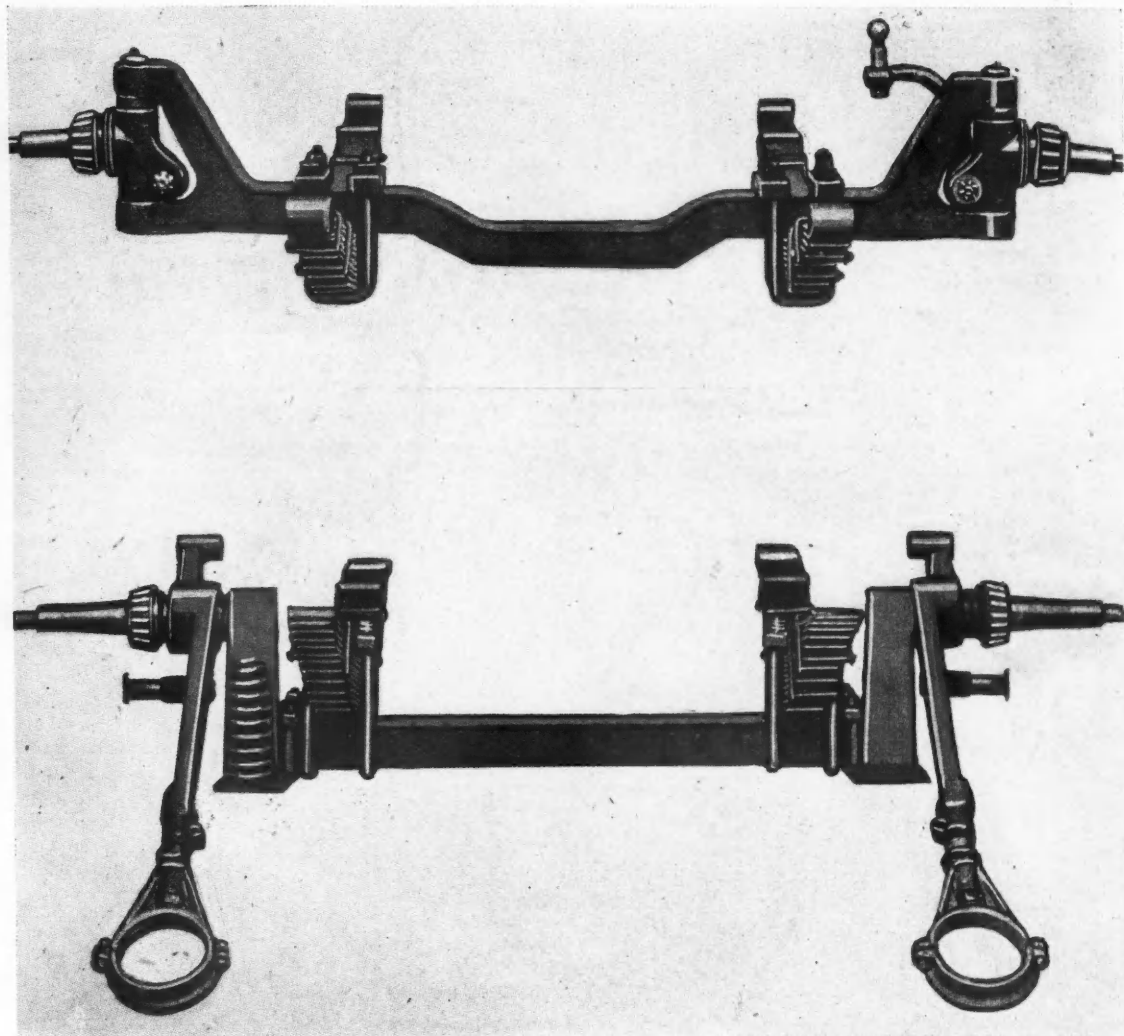
The frame consists of two channels and four cross-members. To permit close coupling and to permit exertion of pulling effort directly over the axle, front and rear cross-members are set back from the channel ends, forming open front and rear ends. The two center cross-members support steering-arm locking brackets. Welded gusset plates reinforce the frame. Brackets welded and riveted to the ends of the side rails carry chain hooks and serve both as a bracket for the semi-elliptic springs and bumper. The inside ends of the springs are shackled to brackets riveted to the side rails.



Two separate connections, a drawbar (C) and a steering pole (A and D), are provided to steer and draw the Model K Detroit Trailer. The drawbar attaches direct to the front cross-member of the frame, which is located immediately over the axle, while the steering pole connects to the axle. The steering pole can be slid back and forth through the rocking-arm member and may be pushed back under the frame into

a locking bracket when disconnected. A pressed steel plate (B), termed a safety shield, is attached to the rear end of the truck. To it all connections such as hooks for drawbar, steering arm and two chains are provided. The chains, which attach to the drawbar as well as to the trailer, serve as a safety device and as means for supporting the drawbar when disconnected from the truck

DOANE DROPS AXLE



Upper: Front axle, like the rear axle is machined from a solid slab of alloy steel. Front springs are underslung to reduce frame height. Knuckles are equipped with ball thrust bearings. Lower: Double drop dead rear axle, of patented design, is milled from a solid slab of alloy steel without welding or forging. Frame channels are suspended only 20 in. from the ground and rest upon ends of semi-elliptic springs and coil springs. Slides of the frame channels contact the axle to absorb side thrust. Drive is taken through radius rods which extend from the jackshafts to rear axle ends

A UNIFORM platform height of only 24 in. characterizes all four models of Doane low-bed trucks. To achieve this lowness a double drop chain-drive rear axle, underslung front spring and a special frame are employed. A six-cylinder model rated at 2½-3½ tons and four-cylinder models pacity comprise the line.

Doane low-bed trucks have been used on the West Coast for some years and they are now being distributed in the East by Low-Bed Motor Truck Corp., 15 Park Row, New York, N. Y.

In addition to special units shown in accompanying photographs, standard major units are used in the powerplant. Engines are Waukeshas, a four-

cylinder 4% by 5% in. in the 2½-3½ and the 3½-5 ton models, a four-cylinder 5 by 6% in. in the 6-7½ ton chassis and a six-cylinder 3¾ by 4½ in. in the six-cylinder 2½-3½ ton. Pressure lubrication is used in all three engines.

Option of either Bosch or Eisemann magneto is offered and generators are either Bosch or Aladdin. Bosch starters are employed on all models. The fuel feed system comprises a 24-gal. tank under the seat feeding a Stromberg carburetor.

Transmissions are Brown-Lipe make, four-speed in the six-cylinder chassis and three speeds in the others.

Final drive is through a propeller shaft, bevel-gear jackshaft and chains.

Either one or two-piece shafts are employed according to wheelbase. Drive is taken through radius rods. Timken



TO GET LOWNESS

Uniform Platform Height of 24 in. Characterizes
Four-Unit Line With Capacity Range of 2½ to
7½ Tons

bearings are used in the final drive except outer sprocket bearings, which are of self-aligning ball type.

Shackle mounting is employed on the front springs, with Gruss air springs as extra equipment. Rear springs have sliding contact with brackets without shackles.

Auxiliary springs of coil type are incorporated in suspension of the 3½-5 ton chassis. There is one coil spring to supplement each front spring and two coils to aid each rear spring when under heavy load.

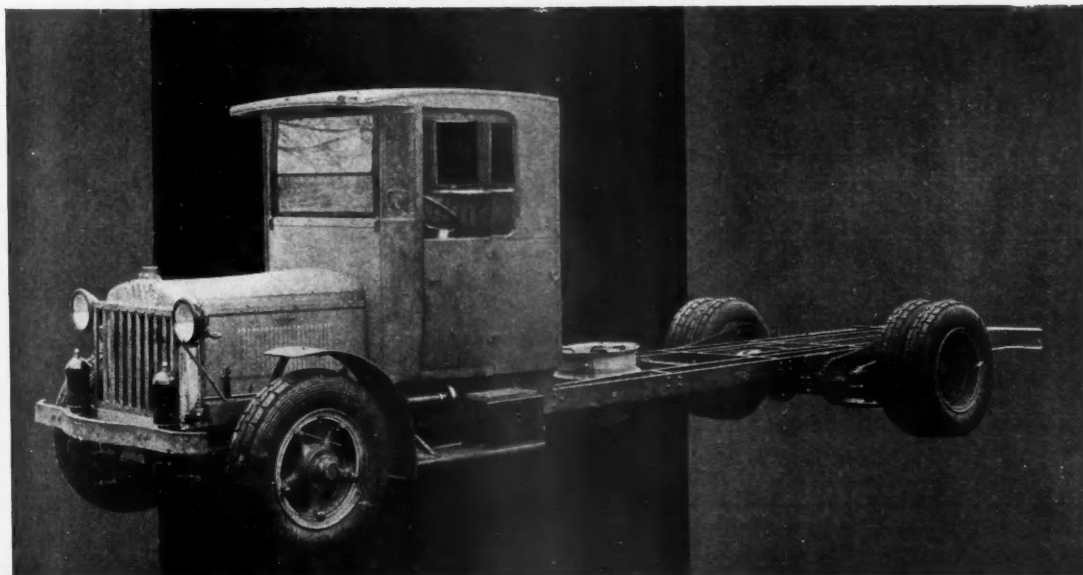
Standard stake bodies are furnished, if desired, for all chassis. Floor and stakes are of hardwood and two hook stakes are provided for loading barrels. Extra equipment supplied at extra cost includes cab, electric lights and starter, speedometer, Gruss air springs and pneumatic tires. Either Alemite or oil cup chassis lubrication is supplied.

Frame of the Doane low-bed truck is composed of two I-beams running full length and two channels, one on either side, starting behind front springs and extending to the rear. Cross members reinforce the assembly and the 6-7½ ton frame is braced underneath by truss rods. The body is fastened to outside frame channels. Rear stake pockets are attached to the rear cross member



Specifications of Doane Low-Bed Trucks

Model	2½-3½ ton 4 cylinder	2½-3½ ton 6 cylinder	3½-5 ton 4 cylinder	6-7½ ton 4 cylinder
Chassis price	\$3,850	\$4,210	\$4,850	\$5,750
Price, including stake body	\$4,100	\$4,460	\$5,100	\$6,000
Capacity, Tonnage rating	2½ ton	2½ ton	3½ ton	6 ton
Body weight allowance	1500 lb.	1500 lb.	1700 lb.	1850 lb.
Chassis carrying capacity	7000 lb.	7000 lb.	10,000 lb.	15,000 lb.
Weight, chassis, lb.	6500 lb.	6500 lb.	8000 lb.	9500 lb.
vehicle gross weight rating	13,500 lb.	13,500 lb.	18,000 lb.	24,500 lb.
Wheelbase, standard, in.	147 in.	184 in.	172 in.	184 in.
optional	172-184	156-172-200	184-200	200
Tires, front, standard, in.	36 x 5 solid	36 x 5 solid	36 x 5 solid	36 x 6 solid
optional	36 x 7 pneumatic	36 x 7 pneumatic	36 x 5 dual	36 x 6 duals
rear, standard	36 x 7 solid	36 x 7 solid	36 x 5 duals	36 x 6 duals
optional	36 x 5 dual	36 x 7 dual	36 x 5 dual	larger duals
Engine, make	Waukesha	Waukesha	Waukesha	Waukesha
number of cylinders	4	6	4	4
size	4¾ x 5¾	3¾ x 4½	4¾ x 5¾	5 x 6¼
valve arrangement	L-head	L-head	L-head	L-head
number of main bearings	3	7	3	3
Governor, make	Waukesha	tubular	Waukesha	Waukesha
Radiator, type	tubular	tubular	tubular	cellular
Clutch, type	multiple disk	multiple disk	multiple disk	multiple disk
Transmission, make	Brown-Lipe	Brown-Lipe	Brown-Lipe	Brown-Lipe
mounted unit	unit	unit	unit	unit
speed	3	4	3	3
Final drive	bevel gear jack-shaft & chain	bevel gear jack-shaft & chain	bevel gear jack-shaft & chain	bevel gear jack-shaft & chain
Universal, type	disk	disk	disk	disk
Front axle, make	own	own	own	own
Rear axle, make	own	own	own	own
type	dead	dead	dead	dead
final drive	chain	chain	chain	chain
Steering gear, make	Ross	Ross	Ross	Ross
type	cam and lever	cam and lever	cam and lever	cam and lever
Service brakes, location	jackshaft	jackshaft	jackshaft	jackshaft
method of operation	mechanical	mechanical	mechanical	mechanical
Hand brake, location	rear wheels	rear wheels	rear wheels	rear wheels
type	internal	internal	internal	internal
Springs, front length	2½	2½	3	3
width	2½	2½	3	3
number leaves	.....	.....	.....	.....
Springs, rear length	.....	.....	.....	.....
width	3 in.	3 in.	4 in.	4 in.
Wheels, type	cast steel or wood	cast steel or wood	cast steel or wood	cast steel or wood
Bodies, height from ground	24 in.	24 in.	24 in.	24 in.
length	192 in.	192 in.	156 in.	175 in.
width	66 in.	52 in.	62 in.	66 in.
Governed speed	15-20 m.p.h.	.....	15 m.p.h.	12-14 m.p.h.



SALE IN DANGER

(Continued from page 16)

our rule, naturally, especially when the salesman brings the prospect in."

This same customer fear of being high-pressured when two salesmen approach him was expressed by W. O. Strausbaugh, president of the Strausbaugh Motor Co., Youngstown, Ohio, Dodge dealer. He emphasized the fact that he has no one in his organization to whom salesmen may look to close their sales when they find it difficult to do so themselves. In every instance where a second man calls on the customer, the first salesman drops out of the picture.

"The exact method to be followed depends on the individual circumstances," declared T. E. Swain, manager of the Oakland, Cal., office of the Reo Motor Car Co. "The salesman always should inform the manager or sales manager of all the facts regarding the selling negotiations. Then, if this has been done conscientiously, I believe the situation can be handled better with the first salesman out of the way. One reason for this is that the salesman sometimes gets too close to the customer—that is, he absorbs too much of the customer's troubles, his wishes, his objections—in a word, too much of his viewpoint. As a result, he is apt to try to do too much for the customer with a consequent losing sight of the fact that it is absolutely necessary not merely to make a sale, but to make one that shall be profitable to the company. The manager constantly has before him the realization of this necessity and he stands a better chance to get the proper deal for the company with the salesman out of the way."

Mr. Swain pointed out that whenever possible the salesman should take the prospect to the manager's or sales manager's office before attempting to close a deal. He has found this method very successful in cases where the selling effort has proceeded as far as an appraisal on the old truck.

The third group, contending that circumstances alter cases and should govern the sales manager's decision, had its arguments excellently summarized by L. D. Hemmon, General Motors Truck Co., distributor of Phoenix, Ariz.

"When a salesman asks aid in closing a sale," said Mr. Hemmon, "give him the kind of help that will make him a better salesman as well as get the order. When the salesman accompanies the helper and is present at the interview, you've got to consider the psychological effect on two people: first, on your salesman, and second, on your customer. The same when he's absent.

"Get your salesman's story first, right down to the minute, and judge what the effect will be on his future efficiency if you take the business out of his hands and shut him out of the closing interview. This is important

to you, because your business and your business organization are the machine you've got to do your future work with, and you are naturally more concerned with that than you are with any one sale. Get his confidence and show him that you are giving him yours. Decide together whether it will be best for him to be present at the next interview with the customer, or whether someone else on the force can handle the business more effectively alone. If he believes he had better step out, the probability is that he has shot his bolt insofar as that particular prospect is concerned and had best fade out; if he inclines to think that he still can be effective, the chance is that you can give him the help he needs and then send him back on the job alone. If you succeed in bolstering him up so that he does go back and make the sale, you've made a better salesman out of him, and you've saved the time of both the customer and your firm. In the long run the dealer's efforts are best concentrated on building up his sales force rather than in selling cars.

"Still, you don't want to miss that sale. If it's simply a case where his personality doesn't nick with that of the prospect, judge it for yourself, tell the salesman and let him lay off.

"In general, the only time when two men ought to be sent to confront a customer is when you are sure the salesman has succeeded in selling himself but needs someone more expert in selling the truck."

Agreeing that whether or not the salesman accompanies the helper must depend upon the sales manager's judgment, R. E. Davis, general manager, O'Brien-Davis Auto Co., Dodge dealer, Omaha, Neb., had this to add: "As for ourselves, we don't expect a salesman always to be alone. We make trips with the salesman in order to check up on him. In this way we keep him out of a rut. He might otherwise be piling our files full with prospects that mean nothing in future sales. Trips with salesmen, whether or not a helper is needed in closing a sale, enables us to analyze his methods. A salesman, like a bird dog, cannot show his ability or defects if he is studied only in a cage."

"Sometimes yes, sometimes no," declared S. A. Stephens, president, S. A. Stephens, Inc., Buffalo, N. Y., Dodge dealer and distributor. "Each case calls for individual treatment. Usually the salesman is along and introduces myself or the truck sales manager casually, without referring to our titles or purpose. Probably our salesmen have help in closing in half the cases. Personally, I usually let the salesman do most of the talking, merely listening myself and chiming in when I think it will help. When another man is called

in to help close, it should be done as unostentatiously as possible, otherwise much greater sales resistance will be created."

Others who declared that each case must be handled on its merits were C. E. Anderson, sales manager, General Motors Truck Co., Birmingham, Ala.; Ralph J. Rieman, general manager, Kam-Rieman Co., Inc., Buffalo, N. Y., General Motors Truck dealer-distributor, and H. L. Smoots, sales manager, Federal Motor Truck Co., Birmingham, Ala.

Mr. Anderson explained that "there are times when a salesman has antagonized a customer quite without meaning to. In a case like that it is best for the salesman to stay away when the sale is being closed, and the best judge of whether or not he should accompany the helper is usually the salesman himself."

"Usually," Mr. Rieman added "the salesman is well-liked by the customer, but simply lacks the punch to get the contract signed. In such cases, I believe, the presence of the salesman helps—certainly does not hinder. On the other hand, one of the best salesmen I ever knew had a way of rubbing a customer the wrong way at closing. In such cases the man doing the closing could do better alone."

Five Ideas in Custom Bodies

(Continued from page 25)

are also supplied as extra equipment.

Low mounting is made possible by the elimination of wooden bolsters or understructure, the body instead being mounted on two steel sub-sills running the full length of the chassis frame. This, together with the fact that the fenders are built-in and project above the floor of the lower deck, brings the load center of a standard Weldmech deck body 15 in. above the chassis. Bodies mounted over the wheels have a load center 25 to 30 in. above the chassis. While bodies with built-in fenders are standard, bodies are also furnished for chassis already equipped with fenders. From the rear end of the fenders which extend beyond the side angles, mud shields extend to the end of the body for the protection of both the body and the case goods.

Sheet steel or pipe upper floors are optional. In either case the bottom floor is sheet steel to keep mud and dirt from splashing up into the body. Being electrically welded the floors are smooth, which not only facilitates case handling, but because of reduced friction in sliding cases, wear and tear on cases is held down.

While this body was designed to take flex and weave with the truck chassis, the load is held firm to prevent side slapping. Besides, side-sway is reduced by the low center of gravity.

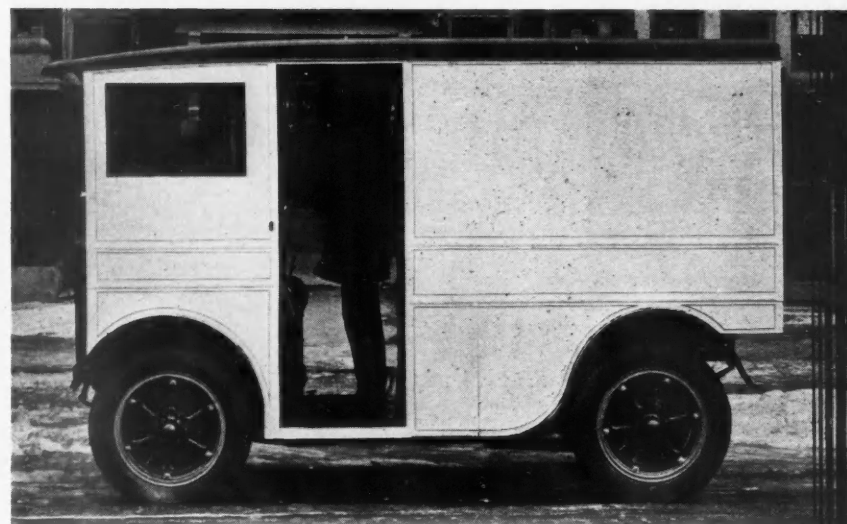
Because the cases carried in this body are packed independent of each other, drivers can handle two cases at once and without the aid of a helper. The body can be loaded and unloaded from either side.

THORNE GAS-ELECTRIC FOR HOUSE DELIVERY

New 1½-Ton Drop Frame Unit Designed for Frequent-Stop Service Has 4-Wheel Lockheed Hydraulic Brakes

A NEW frequent-stop vehicle for house-to-house delivery, operated by gas-electric power and equipped with Lockheed brakes, has been placed on the market by the Thorne Motor Corp., 3231 W. Lake Street, Chicago, Ill. This new 96-in. wheelbase unit has adequate space in its panel body for a load of 40-qt. crates, two or three butter boxes and space for carrying ice during summer months, or a total pay-load capacity of 3000 lb. The total chassis and body weight of the vehicle is 4000 lb.

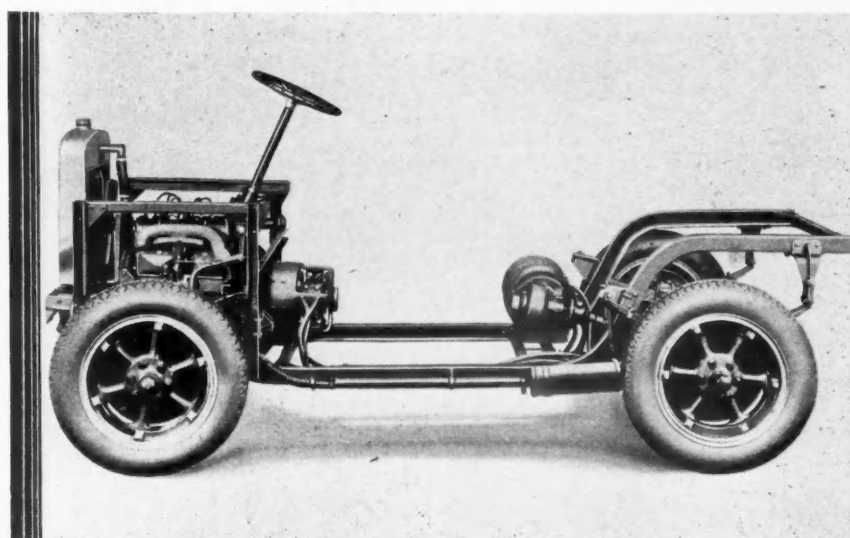
A low floor height of 11 in. is made possible by carrying all units in two assemblies over the front and rear axles and dropping the frame amidships. Entrance for driving or to the interior of the body is through either of two side doors. Power is controlled by a dash-mounted switch, having three positions, forward, reverse and neutral. Another switch is provided on the dash to cut in the generator weak field for hard pulls. In addition to a throttle on



Showing driver behind the wheel and accessibility of controls

the steering column, a foot-operated switch on the floor is provided for fast acceleration. These, together with parking and service brakes, operated by pedals on the floor, complete the control mechanism. Engine speed is controlled by a governor.

Units of the Thorne Gas-Electric Delivery unit are mounted over the front and rear axles



The front-end assembly includes the radiator, steering gear, engine and generator, mounted in a channel-iron cradle as a unit over a drop-forged I-beam front axle. The rear-end assembly carries the motor and rear axle. Construction is such as to permit easy access for inspection and repairs.

The engine is a low-speed, 3% by 4¼-in. four-cylinder Continental, having an S.A.E. horsepower rating of 18.22, and is mounted integral with a General Electric 70-volt generator. Carburetion is by an air cleaner equipped Wheeler-Schebler, while starting, lighting and ignition is furnished by Auto-Lite, together with a six-volt Exide battery. A 3-in. core, two-finned type radiator is mounted on the front cross member of the frame. Exhaust is carried through a flexible and straight tube suspended outside and below the left side rail to a muffler supported by a bracket at a point below the rear spring front bracket.

Cables carried inside the left side rail carry the current to a General Electric 70-volt motor, which is mounted on the right side of cross-members secured to the frame side rails at a point just before the kick-up over the rear axle. The motor is mounted crosswise to the frame, but is directly connected to the rear axle through gearing in the ratio of 2 1/3 to 1, two metal universals and a short shaft. Final drive is through a spiral bevel, semi-floating axle, giving a final reduction of 5.1 to 1. Overall reduction is 11.5 to 1.

The 3 by 1½ by 3/16-in. pressed-steel frame, reinforced by heavy cross-members and gusset plates, is Hotchkiss, suspended on four 10-leaf semi-elliptic vanadium steel springs, 2 by 37
(Turn to page 60, please)

ACME ADDS 4-SPEED TON TRUCK TO LINE

*Model 17 Equipped With a 6-Cylinder
Engine, Full Floating Rear Axle and
Lockheed Hydraulic Brakes*

Specifications of Acme Model 17

Capacity	2000 lb.
Chassis weight	3000 lb.
Wheelbase	136 in.
Tires, front	30 x 5 in.
" rear	30 x 5 in.
Engine	Cont. 29-L
size	6-2 7/8 x 4 3/4 in.
displacement	185.04 cu. in.
type	L-head
hp. at 2800 r.p.m.	44 1/2
Carburetor	Tillotson
feed	vacuum
Gasoline tank, location ..	under seat
capacity	20 gal.
Ignition, make	Auto-Lite
type	battery
Starter	Auto-Lite
Generator	Auto-Lite
Radiator, make	Perfex
type	cellular
Clutch, make	Borg & Beck
type	single-plate
Transmission, make	Fuller WO
Speeds and mounting	4-unit
Propeller shaft	2-piece
Universals, make	Blood Bros.
type	metal
Rear axle, make	Timken 52000-H
type	full-floating
Final drive	bevel gear
Torque and drive	springs
Steering gear	Ross
type	cam and lever
Service brakes	4-wheel hydraulic
drum size	16 x 2 1/4 in.
Hand brake	external band
location	rear of transmission
size	8 in. diameter
Springs, front	37 x 2-9
" rear	50 x 2 1/2-16
Frame, material	pressed steel
Depth, width, thickness ..	4 3/4 x 3 x 1/4 in.
Width of frame	33 in.
Wheels	wood spoke
Back of cab to end of frame	108 in.
Back of cab to center rear	58 in.
axle	58 in.

ANNOUNCEMENT is made by the Acme Motor Truck Co., Cadillac, Mich., of the addition of a new one-ton model to its line. This new unit, designated Model 17, is equipped with a six-cylinder Continental engine, four-speed Fuller transmission, bevel gear Timken rear and Lockheed hydraulic brakes. Designed in one wheelbase of 136 in., Model 17 provides a loading space of 108 in. With a chassis weight of 3000 lb. and an allowance of 3400 lb. for body and load, the vehicle has a maximum gross weight rating of 6400 lb.

The Continental engine, which is the six-cylinder 2 7/8 by 4 3/4 in. Model 29-L, develops 48 1/2 hp. at 2800 r.p.m. It is mounted in unit with a Borg & Beck single plate clutch and a Fuller Model WO four-speed transmission. The gear ratios of the transmission are as follows: 1st, 6.16 to 1; 2nd, 3.18 to 1; 3rd, 1.745 to 1; 4th, direct, and reverse, 7.25 to 1. The Timken rear axle, which is of the bevel gear, full-floating type, provides a final reduction of 5 5/6 to 1. Gasoline is fed by vacuum from a 20-gal. tank located under the driver's seat to a Tillotson carburetor. Starting, lighting and ignition are furnished by Auto-Lite equipment. Other specification details are presented in the accompanying table.

Standard equipment includes instrument panel, oil gage, ammeter, electric horn, gasoline filter, speedometer, extra rim, etc.

Acme Model 17 equipped with platform body with sectional stake sides. The wheelbase is 136 in. and the capacity 2000 lb.



Greater Safety for Cross-Country Lines

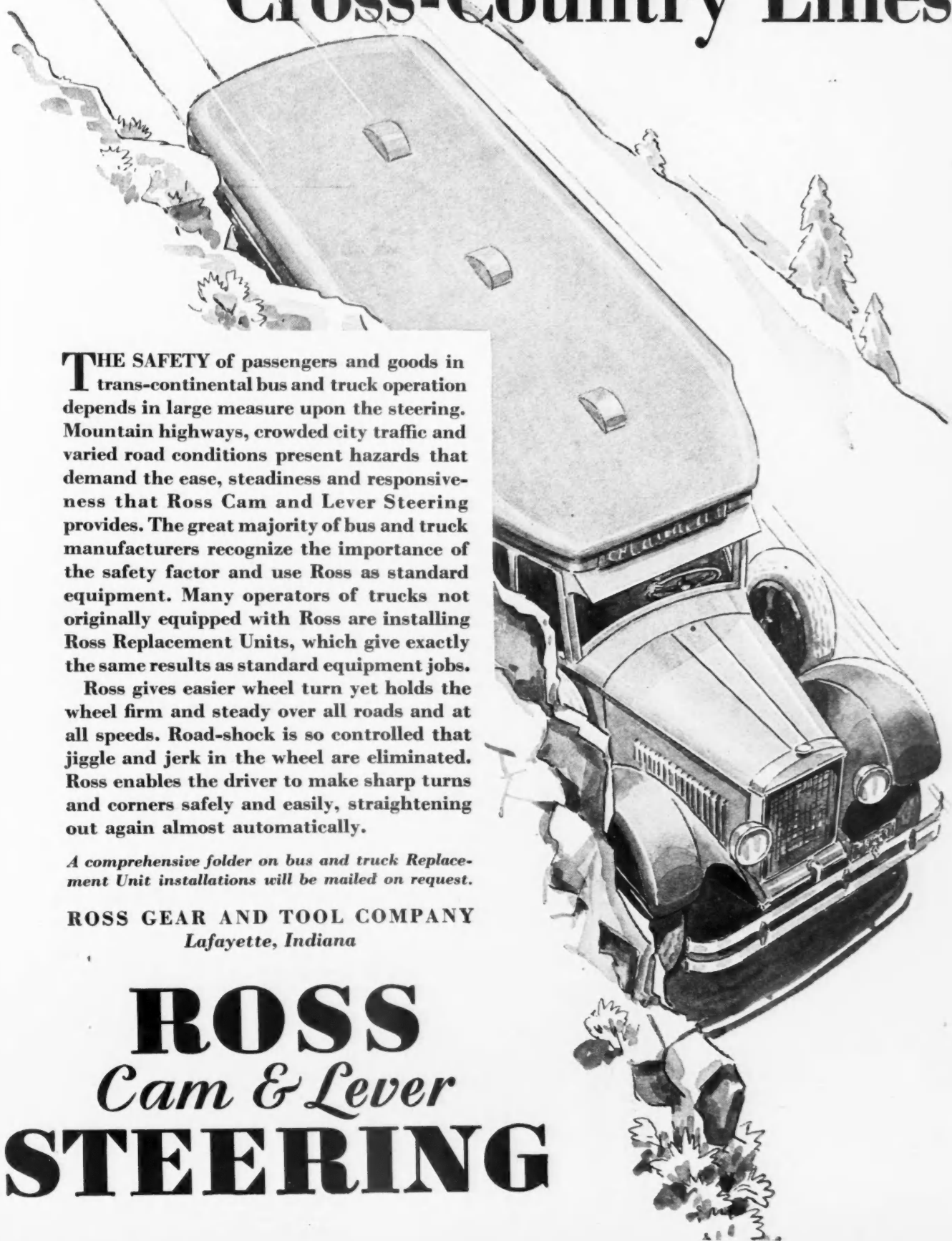
THE SAFETY of passengers and goods in trans-continental bus and truck operation depends in large measure upon the steering. Mountain highways, crowded city traffic and varied road conditions present hazards that demand the ease, steadiness and responsiveness that Ross Cam and Lever Steering provides. The great majority of bus and truck manufacturers recognize the importance of the safety factor and use Ross as standard equipment. Many operators of trucks not originally equipped with Ross are installing Ross Replacement Units, which give exactly the same results as standard equipment jobs.

Ross gives easier wheel turn yet holds the wheel firm and steady over all roads and at all speeds. Road-shock is so controlled that jiggle and jerk in the wheel are eliminated. Ross enables the driver to make sharp turns and corners safely and easily, straightening out again almost automatically.

A comprehensive folder on bus and truck Replacement Unit installations will be mailed on request.

ROSS GEAR AND TOOL COMPANY
Lafayette, Indiana

ROSS *Cam & Lever* **STEERING**



GRAYBAR TAKE-OFF HAS FAST REVERSE GEAR

Uses All Transmission Speeds by Being Mounted in Divided Propeller Shaft

THE Graybar Electric Co. is distributing a propeller shaft power take-off, which serves as part of the truck drive and transmits power for the operation of auxiliary equipment whether the truck is in motion or stationary. Located in back of the transmission the power take-off is affected by all the speeds of the transmission. In addition the unit provides a reverse or lowering speed which is slightly faster than the forward or pulling speed. It is made by the Utility Supply Co., Clintonville, Wis., and is designated as the Model P.

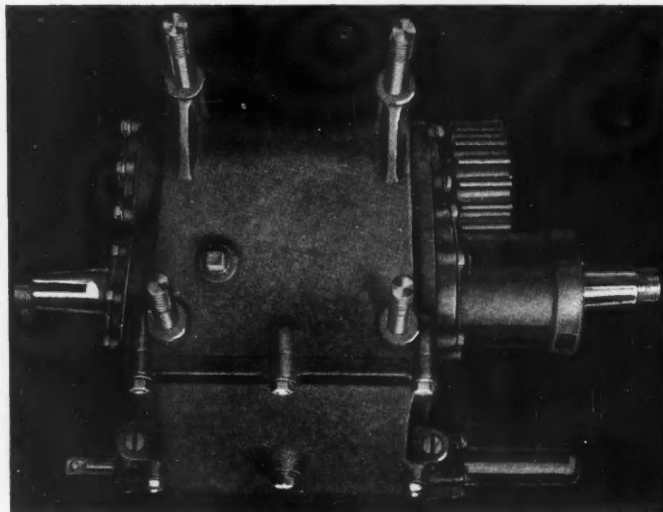
A single sliding shifting gear and a progressive shift shaft controls operation. By means of this single control, engine power may be delivered direct to the rear wheels or to the auxiliary equipment or both. It also engages the power take-off reverse gear. All positions are engaged by shifting the lever straight forward or back.

The high speed reverse is provided to eliminate the practice of racing truck engines, when the truck transmission is depended upon to lower a load. This feature is particularly desirable on cable removing jobs where it is necessary to take a new grip every 4 to 6 ft., requiring a reversal of the winch each time. With the Model P take-off the operator selects the speed best adapted to the job, and then uses the take-off reverse.

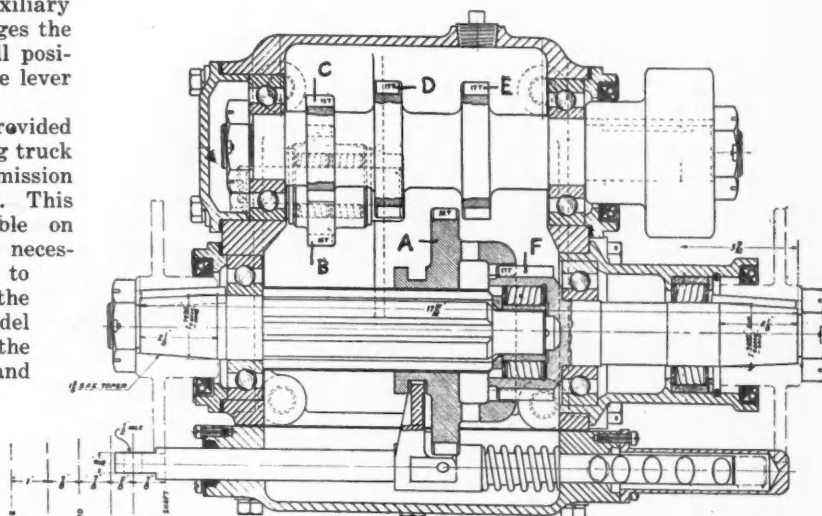
The gears of the unit are of heat-treated chrome-nickel steel and all shafts and gears are mounted on anti-friction bearings. Dimensions are approximately as follows: Length, 19 in.; width, 11 1/4 in., and height, 14 1/2 in.

To provide an extra drive for double drum winches or other devices such as pumps, etc., an auxiliary drive is furnished. This may be mounted on the take-off in place of the regular cover and the shift shaft.

This auxiliary drive is equipped with a sprocket to fit the standard winch chain. There is no reverse provided, so it is necessary to use reverse in the truck transmission. This drive does not usually connect with the operating drum.



Propeller shaft power take-off made by the Utility Supply Co. and distributed by the Graybar Electric Co.



Sectional view of the propeller shaft power take-off showing single shifter bar, single shifting gear and shaft, and power take-off gears. The various positions of the shifting gear are indicated by the relative positions of the shifter bar shown in the lower left corner. Winch reverse is obtained by engaging shift gear A with idler gear B, which is in mesh with reverse gear C; winch forward is obtained by engaging the shift gear with gear D on power shaft, and both the truck propeller shaft and power take-off shaft are engaged simultaneously by meshing the external teeth of the shift gear with gear E on power shaft and the internal teeth of the shift gear with gear F on the main shaft. As will be observed, two neutral positions are provided. The power shaft and the forwards of the drive and main shafts are mounted on ball bearings, while Hyatt roller bearings are used as a pilot bearing and for the rear of the main shaft.

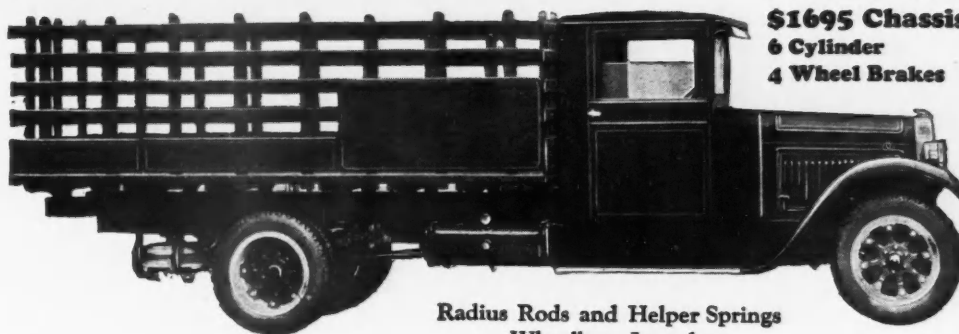
TWO NEW STEWART TRUCKS

New 1 1/2 Ton
\$1495 Chassis
 6 Cylinder
 4 Wheel Brakes



Radius Rods and Helper Springs
 Wheelbase Lengths
 136, 145, 160, 176 inches

New 2 Ton
\$1695 Chassis
 6 Cylinder
 4 Wheel Brakes



Radius Rods and Helper Springs
 Wheelbase Lengths
 145, 160, 176 inches

"Honest Trucks—Honestly Rated"

Sensationally Priced

TWO new honestly rated trucks offering unequalled value at prices nothing short of sensational. Stewarts are not inflated capacity trucks ... from radiator to tail light they are "real" trucks designed and built by an exclusive truck maker.

These Stewarts are equipped with radius rods, auxiliary helper springs, 6 cylinder "truck" motor, 4 speed transmission, electric lights and starter, gas filter and air cleaner. Beyond question they offer the greatest dollar value in truckdom.

Stewarts are built to give 5 to 10 years of constant service. A side by side comparison will prove conclusively that Stewarts are "The World's Greatest Truck Value" ... unequalled at their price.

Stewart Sales are increasing

Stewart sales in 1926 were 41% greater than in 1925; in 1927 45.7% over 1926; in 1928, 53% ahead of 1927. To date, 1929 sales are far exceeding those of 1928. Learn why.

STEWART MOTOR CORPORATION
 BUFFALO, N. Y.

Export Branch: 1 BROADWAY (Dept. 3) NEW YORK CITY, U. S. A.
 Cables: Stewartruk New York, Codes: Acme, Bentley, ABC 5th Improved 5 & 10 Letter
 (Universal Trade Code)

Models

3/4 Ton
 6 Cylinder, \$895 Chassis
1 Ton
 6 Cylinder, \$995 Chassis
1 1/4 Ton
 6 Cylinder \$1295 Chassis
1 1/2 Ton
 6 Cylinder, \$1495 Chassis
2 Ton
 6 Cylinder, \$1695 Chassis

Stewart
 MOTOR TRUCKS

Models

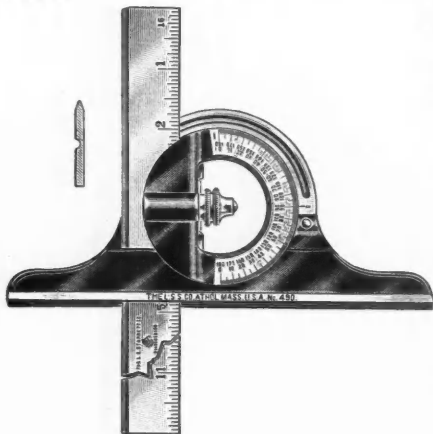
2 Ton Special
 6 Cylinder, \$2290 Chassis
2 1/2 Ton
 6 Cylinder, \$2690 Chassis
3 1/2 Ton
 6 Cylinder, \$3690 Chassis
4 Ton
 6 Cylinder, \$4200 Chassis
5 to 7 Ton Model
Coming
 All prices f. o. b. Buffalo

Stewart Trucks Have Won By Costing Less to Run

NEW PRODUCTS FOR THE TRUCK MARKET

V-Edge Protractor

Designated as No. 490 B, this device with V-edge blade made by the L. S. Starrett Co., Athol, Mass., is designed for checking the perpendicular alignment of engine cylinders. By ascertaining the variation between protractor head and face of block, with feeler leaves, mechanics can correctly adjust reconditioning machine. Price, \$6.25.



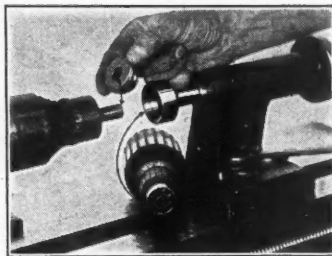
Electrical Wrench Set

The Williams-Husky Electrical Set No. 237, offered by J. H. Williams & Co., Buffalo, and Husky Wrench Co., Milwaukee, includes seven Williams' Midget "Superrenches," 7/32, 1/4, 5/16, 11/32, 3/8, 7/16 and 1/2 in., each wrench having two openings of the same size but at 15 and 75 degrees, and eight Husky "Baby" sockets, tapered for work in close quarters, 5/32, 3/16, 1/4, 5/16, 11/32, 3/8, 7/16 and 1/2-in. Hex, together with a 5-in. combination Tee and a 4 1/2-in. Handy Grip. The units are packed in a 5 1/4 x 2 3/4 x 1 in. box.



Armature Centering Cup

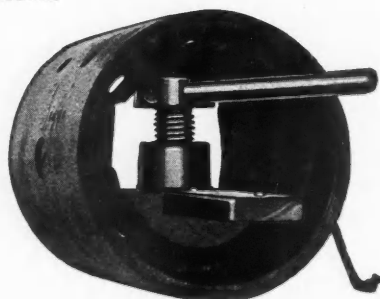
Tail stock centering cups for armature turning in lathes are being offered by the Allen Electric & Equipment Co., Kalamazoo, Mich. The device consists of an adaptor for mount-



ing on the shaft of centerless armatures, and a cup which fits into the tail stock. The cup serves as a bearing for the adaptor. Model A67E fits any make of lathe of No. 2 Morse taper. Price, \$6.

Pole Shoe Spreader

The P-15 universal pole shoe spreader, made by the Allen Electric & Equipment Co., Kalamazoo, operates on the principle of a screw type jack, compressing the field coils and forcing the pole shoes tightly into place. Spreading range is from 2 3/4 to 3 3/4 in. Larger armatures can be accommodated by blocking the base or by use of longer screws.



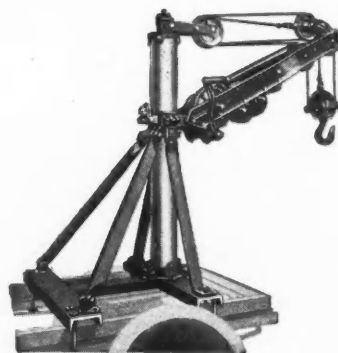
Motor-Gage

Ignition and valve timing, compression and ignition may be tested and checked by this gage. It is screwed into a spark plug hole and the ignition wire connected to the terminal at the side. Timing is indicated by contact of piston, or valve, with a finger at the bottom which registers movement on the gage. Compression is shown by another set of figures on the dial and ignition timing and intensity are indicated at the bottom of the dial. Made by the Automatic Motor Control Corp., 113 East 138th St., New York, N. Y.



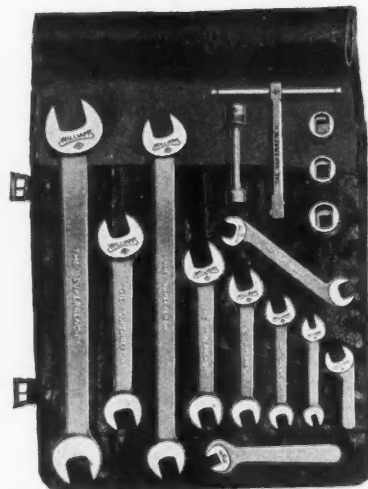
Service Truck Derrick

This derrick known as the Ammeo and distributed by the Automotive Maintenance Machinery Co., Chicago, Ill., has a boom that can be swung in a complete circle and locked in any position. The boom, operated by an independent winch, can be raised or lowered 5 ft. between low and high positions. It is constructed of steel and malleable iron and is fastened by bolts as illustrated. Specifications: Capacity, 2 1/2 tons; base, 36 x 27 in.; boom, 4 ft., 3 in.; lift over truck frame, 5 ft., 6 in.; weight, 465 lb.; gear ratio high, 20 to 1; low, 50 to 1; price, \$148.



Superrench Brake Set

This set, designated as No. 1950 and manufactured by J. H. Williams & Co., Buffalo, is specially designed for automotive brake adjustment. It consists of ten open end and four socket wrenches for work on Lockheed hydraulic, Bendix, Steeldraulic, or other mechanical brakes.



THE LAKE SHORE ELECTRIC RAILWAY CO.

Motor Coach Divisions
1304 E. Erie St.,

Lorain, Ohio, June 24, 1929

Ferodo & Asbestos, Inc.,
New Brunswick, N. J.

Gentlemen:

You will be interested to learn that we have just removed our first set of "Ferodo" Brake Lining that was installed on shaft brake Model 50 White Bus No. B-3, which is used in city operation. The "Ferodo" Brake Lining has given approximately 115,200 miles of service over a period of 26 months.

We have used "Ferodo" Brake Lining exclusively for nearly three years on our fleet of White Busses. In no instance have we experienced any squealing, chattering or drum trouble, and "Ferodo" functions just as efficiently in wet weather as it does in dry weather. Naturally, we feel by using "Ferodo" Brake Lining our brake cost is kept down to a minimum.

Very truly yours,

Wm. H. Shumaker

Motor Coach Division.

WHAT better evidence could there be of the thorough goodness and reliability of Ferodo Bonded Asbestos Brake Lining? 115,200 miles in city operation, with constant stopping . . . brakes just as efficient in wet weather

as in dry . . . no drum trouble, no chattering, no squealing! But this is nothing unusual . . . Ferodo is steadily piling up such records. Try it out on one of your vehicles . . . then you will likewise know that Ferodo is better.

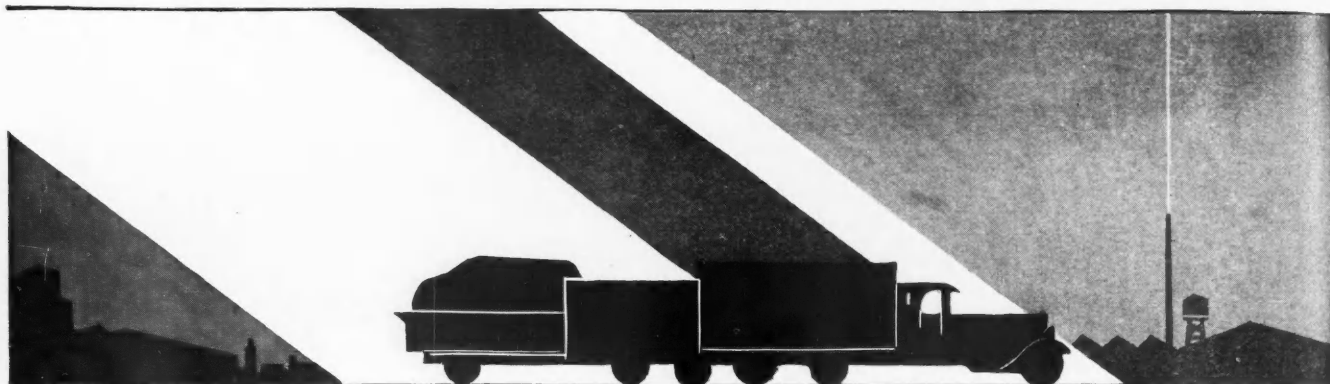
FERODO
and
ASBESTOS
Incorporated



FACTORY
and
GENERAL OFFICES:
New Brunswick, N. J.

E. 8-29

TRUCK INDUSTRY



N = E = W = S

John N. Willys Resigns as Company President

John North Willys relinquished executive control of the Willys-Overland Company, which he founded twenty-one years ago, resigning as president to become chairman of the board. Linwood A. Miller, who joined the company fifteen years ago, was elected president. There will be no change in personnel or policies as a result of the change in management, according to a later announcement issued by Mr. Miller. George H. Bancroft, has been named general purchasing agent, to succeed the late W. B. Calkins, according to the new president.

Perkins Succeeds Legge

Herbert S. Perkins, vice-president of the International Harvester Co., has been elected president of the company to fill the place vacated by Alexander Legge, who resigned to head the new Federal Farm Board appointed by President Hoover. Mr. Perkins has been associated with the company since 1898.

Reo Promotes Smith

E. A. Smith, president of the Reo Motor Car Co. of California, has been transferred to Lansing, Mich., to become assistant sales manager in charge of all Reo branch operations throughout the United States. W. A. B. Hanchett, head of the retail sales department, has been chosen to succeed Mr. Smith as president of the California company.

Lempco Elects New Officers

At a recent directors meeting, the Lake Erie Metal Products Company, Bedford, Ohio, makers of Lempco axle and driveshafts, worm and gears and gun alloy and pressed steel brake drums, elevated Frank L. Wolf to the

position of vice-president in charge of sales and Peter Hronek as treasurer. Both men have been connected with the company almost since its inception ten years ago. Edward Krieger was appointed assistant to Mr. Wolf and sales promotion.

Tracy and Young Join Relay

M. D. Tracy and George G. Young, formerly district sales managers in the truck division of General Motors Corporation, are now with the Relay Motors Corp. of Lima, Ohio, in like capacities. Mr. Tracy has taken up his duties in the east while Mr. Young is now located in the central western zone.

Foote Perfex Factory Manager

G. W. Foote has been appointed factory manager of the Perfex Corp. of Milwaukee, according to D. T. MacLeod, president.

Thompson Earns \$646,621

Thompson Products, Inc., reports net earnings for the first five months of current year of \$646,621 after all charges, which compares with \$417,208 for the corresponding period last year.

Coming Events

SHOWS

Atlantic City—American Bottlers of Carbonated Beverages..... Nov. 11-15
Atlantic City—American Road Builders Assn. Jan. 11-18
Chicago—Motor & Equipment Assn. Nov. 4-9
Detroit—National Standard Parts Assn. Nov. 11-16
Chicago—National Automobile Show, Jan. 25-Feb. 1
New York—National Automobile Show, Jan. 4-11

CONVENTIONS

Atlantic City—American Electric Railway Association Sept. 28-Oct. 4
Chicago—National Automobile Dealers Assn. Jan. 27-28
Chicago—National Safety Congress, Sept. 30-Oct. 4
Detroit—National Standard Parts Assn. Nov. 11-16

Bussing Establishes Headquarters in Chicago

Chicago has officially become national sales and distribution headquarters for German-built Bussing truck and bus chassis. The American concern will be known as the Bussing Motors Company of America with headquarters at 3673 So. Michigan Avenue. It is also known that J. J. Shannon, identified in the American industries for fifteen years, has been named vice-president and general manager of the company. The Bussing chassis, well known abroad, embraces a number of features of chassis design, one of which is a double propeller drive with a separate drive to each of two sets of rear axles.

This construction is said to assure perfect equalizing of the parts in heavy duty six-wheel types of vehicles.

Weatherproof Takes Plant

The Weatherproof Body Corp., subsidiary of Allied Motor Industries, Inc., recently took possession of the plant of the Field Body Corp. of Owosso, Mich. The Field plant will add 200,000 sq. ft. of working space to the 130,000 now in operation at the Corunna plant.

Sterling Deliveries Gain

For the first eight months of the fiscal year, beginning November 1, Sterling Motor Truck deliveries have been 55.4 per cent ahead of the corresponding period last year and approximately 95 per cent as large as in the entire previous fiscal year.

AC Promotes Doyle

W. T. Doyle has been appointed territorial representative for the AC Spark Plug Co., and will cover eastern Pennsylvania and New York State.

Ask *any* truck operator

There is only one major reason why the great majority of trucks being built today are equipped with Lockheed Hydraulic Four Wheel Brakes. That is because truck operators have demanded more adequate braking and manufacturers have discovered that the way to satisfy that demand and satisfy it *fully and finally*, is through adopting Lockheed Hydraulics as standard equipment.

What has been the response of truck operators to Lockheed Hydraulics? It is revealed in the increased sales of those trucks which are Lockheed equipped.

It is quickly and impressively revealed, also, in the enthusiastic praise which truck operators accord Lockheed Hydraulics.

Ask any operator of trucks equipped with Lockheed Hydraulics for his opinion—and you cannot resist an overwhelming conviction that the Lockheed Hydraulic brake system is one of the greatest advances ever recorded in the manufacture and in the operation of motor trucks.

HYDRAULIC BRAKE COMPANY

DETROIT, MICHIGAN, U. S. A.

LOCKHEED HYDRAULIC

Four BRAKES *Wheel*

LaFrance-Republic Corp. Personnel Set-Up

Details of the personnel of the officers of the newly merged LaFrance-Republic Corporation, including subsidiaries, the LaFrance-Republic Sales Corporation and the Linn Mfg. Corp. have been completed and are as follows:

The officers are: Joseph A. Bower, chairman of the board; Wallace J. Childs, chairman of the executive committee; Charles B. Rose, president; George R. Hanks, vice-president; Frank L. Pierce, vice-president; Orley M. Canter, comptroller; Glenn S. Crisp, secretary; Ralph W. Stork, treasurer.

The officers of the LaFrance-Republic Sales Corp. are: Charles B. Rose, president;



Soper elected
vice-president

F. D. Soper, vice-president; Frank L. Pierce, vice-president; Ralph W. Stork, treasurer; Glenn S. Crisp, secretary.

The officers of the Linn Mfg. Corp. are: Charles B. Rose, chairman; George R. Hanks, president; George Whitman, vice-president; Orley M. Canter, secretary; H. D. Mills, treasurer.

Reynolds Elected to Board

The International Harvester Co. recently elected Arthur Reynolds, chairman of the Board of the Continental-Illinois Bank and Trust Co., a director. Mr. Reynolds succeeds Robert T. Lamont, who was made Secretary of Commerce in President Hoover's cabinet. E. C. Wampler was elected vice-president and a member of the board.

Hennecke With McQuay

John L. Hennecke has been appointed sales manager of the automotive division of the McQuay Radiator Corp., with offices in Chicago. Mr. Hennecke was formerly with the Moto Meter Co. in charge of sales in the central west.

Martin-Parry Reports Profit

Martin-Parry Corp. reports a net profit for the quarter ended May 31, after all charges, of \$8,891. This compares with profit for the corresponding quarter of 1928 of \$26,705 before Federal taxes.

Timken Earnings Increase

Timken Roller Bearing Co. reports net earnings for the six months ended June 30, after all charges, of \$8,449,198, which compares with \$6,395,572 for the corresponding period of 1928.

Build 3½-Ton Double Drive Truck

The Double Drive Truck Company, Benton Harbor, Mich., has added a new

four-wheel drive truck to its line. This new unit is powered by a Hercules model K4 cylinder, 4¼ x 5½ in. engine developing 45 hp. at 1200 revolutions and is equipped with a unit type transmission of own make providing eight speeds forward and two reverse. Other equipment includes Pierce governor, Zenith carburetor, Splittorf magneto, Modine radiator, Borg & Beck clutch and Ross steering gear. The front and rear drive axles are full-floating with double reduction drive and bevel gear drive to the wheels.

Oberholtzer Elected Head of National Association

George L. Oberholtzer of Philadelphia was elected president of the National Team and Motor Truck Owners' Association, to succeed James Simpson of Pittsburgh, at the convention of the association in Cincinnati. David J. McHugh, president of the Cincinnati Association, was chosen first vice-president; John Broderick, Chicago, second vice-president; James M. Maye, Philadelphia, secretary; William J. McDevitt was reelected treasurer. L. A. Graham, of the Relay Motors Corp., addressing the closing session, declared it was up to the truck manufacturer to cut the operator's transportation cost. Few truck owners have been aware of the real cost of transportation in the past, he said, because they had considered only the initial cost of the vehicle. The second cost of trucking, or the cost of the transportation that the truck may deliver, he urged as the important item.

Driver Reaction Studied in Test

Tests made by the Massachusetts Auto Vehicle Department that the motor truck driver is a safer and less irresponsible pilot than the average driver of a passenger car, the Massachusetts study revealed that the frequently maligned truck driver reacts nearly 100 per cent faster in emergency than the ordinary passenger car driver, and can be credited with a better safety record in spite of the fact that his truck covers more mileage and travel in congested areas where accident risks are much more numerous.

India Rubber Appointment

T. E. Osborne has been appointed Pacific Coast credit manager for India Tire & Rubber Co., Akron, Ohio. Mr. Osborne was formerly credit manager in the Philadelphia branch. Claude Hartwell, formerly with the Marathon Rubber, has been appointed sales representative in Mississippi and Alabama for the India Co.

General Motors Earnings

The General Motors Corp. reports net earnings for the first half of the current year, including equities in the undivided profits of subsidiary and affiliated companies not consolidated, of \$151,860,310, as compared with \$161,267,974 for the corresponding period of last year.

Autocar Defers Brockway Merger Negotiations

Negotiations between the Autocar Co. and the Brockway Motor Truck Co. are still in the discussion stage, and it is probable that no definite action will be taken by either company until next year, according to a high official of the Autocar Co.

The earnings report of the Autocar Co. is in preparation, and until it is completed, further action on the merger is virtually impossible it was said. Completion of the earnings statement for the first half of this year is expected early in August.

Autocar Promotes Dwyer

C. Eustace Dwyer has been appointed assistant sales manager in charge of national accounts of the Autocar Co., according to general sales manager Coale. During Mr. Dwyer's more than ten years' contact in the industry, he has been associated at different times with the Willys-Overland organization, Timken-Detroit Axle Co. and lately as general sales manager of the Six Wheel Co.



Dwyer
Assistant Sales
Manager

Hercules Expands Factory

Ground has been broken for the construction of the first two new factory units of the plant of the Hercules Motors Corp., Canton, Ohio, as a part of a \$500,000 expansion program. The first unit will increase the floor space by 50,000 sq. ft. and the second by 20,000 sq. ft.

Thermoid to Build

The Thermoid Co. has awarded a contract for a factory addition to cost \$70,000. The building will be 100 x 170 ft. of brick and steel and will be used for the manufacture of brake lining.

Ross Earnings Up

Ross Gear & Tool Co. reports a net profit for first six months of 1929 of \$436,336 after all charges including depreciation and taxes, against \$373,962 for same period in 1928.

Reo Earnings Higher

Net profit of \$1,000,144, after depreciation and Federal taxes, for the quarter ending June 30, is reported by the Reo Motor Car Co. This compares with a net profit of \$537,514 in the preceding quarter.

Auto-Lite Plan Approved

Directors of the J. W. Brown Mfg. Co. have approved the plan of consolidation with the Electric Auto-Lite Company, as proposed by the latter.

PERFECT FIT MEANS- SMOOTH OPERATION



-AND PERFECT FIT IS *GUARANTEED* IN LEMPCO WORMS AND GEARS



Lempco Gun-Alloy Brake Drums are made for all popular types of buses and trucks.

Perfect fit of the worm and gear set in a bus or truck means smooth operation—and smooth operation means longer wear.

Lempco Worms and Gears are *guaranteed* to fit perfectly—and this guarantee is backed by the written bond that goes with every worm and gear we produce.

Leading jobbers in every community carry complete stocks of Lempco Worms and Gears to fit more than 2,200 models of buses and trucks.



Lempco Axle Shafts are made to fit practically every passenger car, bus, truck and taxicab in operation.

*Write for the name of the
nearest Lempco jobber*



The Lake Erie Metal Products Co. Bedford, O.

BRANCH OFFICES AND WAREHOUSES:
 New York 117 West 63rd St. Chicago Wabash Ave. at 21st St. San Francisco 625 Gough St. Atlanta, Ga. 279 Ivy St. Dallas 2705 Williams St. Export Dept. 8-10 Bridge St. New York, N. Y.

Thorne Gas-Electric Delivery Unit

(Continued from page 49)

Front springs are shackled in the front and bracketed at the rear, the rear brackets being riveted to the rear uprights of the cradle. Rear springs are bracketed in the front and shackled in the rear. Front brackets are secured midway in the kick-up of the frame, and spring bolts extend outward from the frame. The shackles are attached to brackets which curve outward and are riveted a few inches from end of frame.

Chassis lubrication is Alemite and steering Ross cam, and Lockheed hydraulic four-wheel brakes expanding in 15 by 2 in. drums provide service braking, while an external brake acting on the motor shaft drums serves for parking. Steel military type wheels, equipped with 30 by 5 in. pneumatic tires, are standard. In addition to head, tail and dash lamps, a large electric dome light is fixed in the interior of the body. Standard equipment includes oil gage, ammeter, electric horn, spare rim, tire carrier, etc.

Body panels are made of Ply-Metl. Body dimensions follow: Inside width, 60 in.; height from floor, 72 in.; height of floor over rear axle, 48 in.; length of driver's compartment, 40 in.; length of floor over rear axle, 62 in.; door width, 25 in., and door height, 72 in.

Apply Business Science to Truck Operation

(Continued from page 17)

whether under its own control or under the management of contractors who serve it.

Motor truck operation must be modern and completely organized as a business to serve adequately the requirements of modern distribution and thus fill its place as an essential part of the business. From the executive head down to the mechanic and the driver there must be coordination, each man undertaking the phase of work for which he is a qualified specialist. Organized understanding and appreciation of the customer's problems relative to sales policies and competition are indispensable.

A motor transportation superintendent must possess years of experience. Exact knowledge is imperative and, like all modern successful business men, he must concentrate not on theories but on facts of proved value and on objectives that count. These objectives are the controlling and reducing to the minimum the transportation costs of each unit of merchandise whether it be a gallon, a package or a hundred pounds. He must assume the position of a watch dog of all such unit costs.

A great aid in spot-lighting the weak points is a cost-record system that will tie up with the books of account. Such records need not be intricate or numerous, but they will be useless unless they are studied daily and the information

gained thereby utilized by all the responsible individuals.

Transportation men have long since realized, much to their sorrow, that they are filling positions that are underpaid and that the job is a thankless one. Their main and outstanding problem is to obtain the proper sort of recognition and get for their department the earned respect that it deserves. They are craving for the cooperation of the chief executive so that they can hold to the minimum the costs of operation; but this they cannot do except by acquiring sufficient authority to make the influence of their ability felt, and this authority they are entitled to have and to hold.

The human element in such an exacting business of service as this cannot possibly be ignored, and the treatment and the sort of recognition given to its chief supervisor are reflected in the morale and efficiency of his entire organization. Thousands of trucks are daily being operated whose drivers are employed and discharged by those other than the individuals in charge of maintenance and operation. Notwithstanding this situation, however, those in charge of maintenance and operation are held responsible for all costs of the vehicles. But how can costs obtained under these conditions be a guide if the burden of cost reduction is imposed upon a motor transportation superintendent having no jurisdiction over drivers, despite their influence on the cost of operation of the trucks; and, equally important, having no jurisdiction over the dispatching and routing of the equipment?

We all know that there are drivers who operate similar trucks under similar conditions for the same company and whose trucks frequently will run for two and three years without a major overhaul, as compared with the drivers whose trucks require almost a yearly overhauling. Under such conditions would it not be better to figure on man-mileage cost instead of on truck-mileage cost? The human element is the most important of all and only under business organization can this human element be directed and controlled in harmony with business science.

The engineer has applied the science of mechanical engineering and metallurgy to the designing and building of his trucks, and so likewise must the operator of motor trucks apply the science of his profession, business science, to his operations if he ever hopes to reach the pinnacle that it is possible for him to reach.

What Is Wanted of a Delivery Truck?

(Continued from page 21)

day, and many services are trying to keep operations down to eight.

We may assume that the average time required to run a package—that is, from truck to door and back to truck—is two minutes if things work smoothly. On 150 stops there are five hours of time during which the truck stands

still. Loading methods vary so widely that it is almost impossible to quote a safe figure for time so lost. Where the delivery route is split or prompt delivery policy requires two trips a day, more loading time must be figured. Some lunch time also must be deducted. In almost any case eight hours actually out on the 40-mile run is about the maximum. With five hours devoted to stops the truck on such a job must be capable of averaging 13.3 m.p.h. in the three remaining hours, including acceleration and deceleration. Anyone who has ever tried to drive a car through city and outlying traffic, with traffic lights to account for, corners to negotiate and starting and stopping 150 times, can begin to appreciate what is demanded of the average delivery truck.

Every minute lost at a traffic light drags down the average amazingly, while a second or two on each delivery stop amounts to further substantial loss when multiplied by 150. It is at once apparent why a premium has been placed upon swift acceleration and smooth reserve power for pick-up in traffic.

Unless a truck is capable of this climb to speed and quick stopping without strain, there enters another element in the matter of miles-per-year, upon which the profit or loss of the operation depends. The accelerating ability of a very light chassis is readily understood, but it is one of the points upon which are based some of the misconceptions mentioned in the opening paragraphs. Profitable operation depends more upon ability to reach or recover a fair average than upon ability to push up to excessive maximum speed.

The cry for speed in delivery service is but a natural result of the pace modern business competition has created. The need for longer runs on retail delivery routes follows the expansion of large stores in suburban districts. Both must be met with fast, flexible trucks.

Hahn Offers 7-Unit Line

(Continued from page 43)

cluding the 2½-3-ton 39-H. Under light load the spring tips touch the frame brackets and as load increases point of contact moves toward the center of the spring. The effect is a progressive stiffening of spring resistance as the load increases.

Radius rods are used in connection with these springs, as well as those on the larger models which have shackles on spring ends.

Radiator shells are of cast aluminum and model 37-H is equipped with a radiator guard composed of vertical tubing attached to angles at top and bottom. The engine compartment under the hood may be lighted when desired by means of an extra headlight bulb in a socket on the forward surface of the dash.

Oil filters and air cleaners are supplied on models incorporating the Continental R engines. Stewart speedometers and channel front bumpers are standard equipment on all models.

Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks Will be Found at the End of Gasoline Commercial Cars

These Chassis Which Are Sold and Recommended for Bus Use Are Designated in the Following Table by Reference Signs (\$) in Front of the Name

For Motor Bus Chassis See Page 77

• Changes
† New Models

(Where prices are not given it is because we have been unable to get them from authoritative sources)

Key of abbreviations page 78

Trade Name and Model	General				Engine				Electrical System		Clutch	Gearset		Rear Axle		Gear Ratios		Front Axle Make and Model	Steering Gear (Make)	Standard Wheelbase		Chassis Weight (lbs.)							
	Chassis Price	Tire Size		Make and Model	Bore and Stroke	N.A.C.C. Rated H.P.	Valve Arrangement	Oiling System	Governor (Make)	Radiator (Make)		Fuel System		Ignition System (Make)	Generator and Starter (Make)	Type and Make	Make and Model			Location	No. of Forward Speeds		Universals (Make)	Make and Model		Type	Total Reduction in High	Total Reduction in Low	Brakes, Location
		Front (inches)	Rear (inches)								Carburetor (Make)	Fuel Feed																	
1000 Pounds																													
Chevrolet Int. Com.	400 107	107	B 4.50/20 B 4.50x20	Own	6-34x34	26.3	H	PG	Non	Har	Car	P	D-R	N-E	P. Roc	Own Int.	U	3	Own	Own Int.	Own Int.	U	3.82	12.68	E*	Own Int.	Own Gen	265	1815
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	21.0	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900
Dodge Brothers	545 109	109	B 28x4.75 B 28x4.75	Own	6-34x34	18.2	L	PC	Non	McC	Car	V	D-R	N-E	P. Roc	Own	U	3	Own	Own	Own	U	4.7	14.28	G*	Own	Own	265	1900

Key of abbreviations page 78

Trade Name and Model	General			Engine					Electrical System		Clutch	Gearset		Rear Axle		Gear Ratios		Front Axle Make and Model	Steering Gear (Make)	Standard Wheelbase						
	Chassis Price	Tire Size		Make and Model	Number of Cylinders	Bore and Stroke	N.A.C.C. Rated H.P.	Valve Arrangement	Oiling System	Governor (Make)		Radiator (Make)	Fuel System		Generator and Starter (Make)	Ignition System (Make)	Type and Make			Make and Model	Location	No. of Forward Speeds	Universals (Make)	Make and Model	Type	Total Reduction in High	Total Reduction in Low	Brakes, Location
		Standard Wheelbase (Inches)	Furnished								Front (Inches)		Rear (Inches)	Carburetor (Make)				Fuel Feed (Make)								
1 Ton—Cont'd																										
Reo DA.....	995 127	138	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
Reo DC.....	1075 138	138	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
Republic Fleetmaster.....	975 128	128	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
Rugby Exp.....	975 128	128	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
Sandford S.....	1000 124	124	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
Selden 7.....	1000 124	124	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
Service 20Y.....	1000 124	124	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
Stewart Buddy.....	1005 128	128	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
*Studebaker GN-N.....	1005 128	128	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
*Studebaker GN-S.....	1045 130	130	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
United 16.....	1221 144	144	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
United 16C.....	1221 144	144	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
U.S. U.....	1550 138	138	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
Wachusett S.....	1550 138	138	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
White 15B.....	1550 138	138	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
Willys-Knight T-100.....	895 130	130	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
World.....	143	143	P 30x5	P 30x5	6-3 3/4x4	27 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.22	18.47	111	111	111	111	111
1 1/4 Ton																										
Atterbury 20B6.....	1395 132	132	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Brookway Junior.....	137	137	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Brookway JF.....	137	137	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Clinton 20B.....	150	150	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Clydesdale 10A.....	154	154	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Corbett 620.....	137	137	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Day-Elder MF.....	1345 131	131	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Defiance RU-45.....	145	145	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Fager 100.....	1300 156	156	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
General Motor T-19.....	975 127 1/2	127 1/2	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Gottfredson B2-26.....	145 1/4	145 1/4	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Gottfredson RB-26.....	129	129	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Graham-Burnstein 10.....	129 1/2	129 1/2	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Indiana 11A.....	129 1/2	129 1/2	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-24.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V	D-R	P. B&B	W-G	U	3	Pet	Own	S	5.83	29.17	111	111	111	111	111
Int. Harvester S-26.....	130	130	P 30x5	P 30x5	6-3 3/4x4 1/2	25 3/4	PC	Non	Har	Str	V															

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Trade Name and Model	General			Engine						Electrical System	Clutch	Gearset		Rear Axle		Gear Ratios		Front Axle Make and Model	Steering Gear (Make)	Standard Wheelbase										
	Chassis Price	Standard Wheelbase (inches)	Maximum Wheelbase (inches)	Tire Size	Rear (Inches)	Front (Inches)	Make and Model	Number of Cylinders	N.A.C.C. Rated H.P.			Valve Arrangement	Oiling System	Governor (Make)	Radiator (Make)	Fuel System				Ignition System (Make)	Generator and Starter (Make)	Type and Make	Make and Model	Final Drive		Type	Total Reduction in High	Total Reduction in Low	Cab to rear of frame	Chassis Weight (lbs.)
																Carburetor	Fuel Feed													
White 20A.....	2125	145 1/2	108	P 34x5	DP34x5	Ow GKA	4-3 3/4x5 1/2	22.5	L	PG	Non	Ow	Zen	V	L-N	L-N	P. Own	Ow 20A	A	4	Spi	Ow 20A	R	S	9.25	32.1	100%	89%	4412	
White 61.....	2450	148	170	P 30x5	DP30x5	Ow 2A	4-3 1/4x4 1/2	22.5	L	PG	Non	Ow	Zen	V	L-N	L-N	P. Own	Ow 2A	A	4	Spi	Ow 2A	R	S	9.25	32.1	100%	89%	4412	
Witt-Will NN.....	2850	144	172	P 30x5	DP30x5	Con S4	4-4 1/4x5 1/2	23.9	L	PC	Non	Ow	Zen	V	L-N	L-N	P. Own	Ow 2A	A	4	Spi	Ow 2A	R	S	9.25	32.1	100%	89%	4412	
Witt-Will C2.....	2850	144	172	P 30x5	DP30x5	Con S4	4-4 1/4x5 1/2	23.9	L	PC	Non	Ow	Zen	V	L-N	L-N	P. Own	Ow 2A	A	4	Spi	Ow 2A	R	S	9.25	32.1	100%	89%	4412	
Woods 32.....	1895	160	180	P 30x5	DP30x5	Her WXA2	8-2 1/2x4 1/2	26.4	L	PC	Non	Mod	Zen	O	A-L	A-L	P. Lon	Tim	U	4	U-M	Tim	S	S	5.83	29.15	118	71	4400	
World D88.....	1895	147 1/2	177 1/2	P 30x5	DP30x5	Lye	8-2 1/2x4 1/2	26.4	L	PC	Non	Mod	Zen	O	A-L	A-L	P. Lon	Tim	U	4	U-M	Tim	S	S	5.83	29.15	118	71	4400	
1 3/4 Ton																														
Sanford AX.....	150			P 34x7		Con 18E	6-3 3/8x4	27.3	L	PC	Non	Fed	Strom	V	D-R	D-R	D. B-L	Eat	U	3	Blo	Eat	S	S	6.38	26.4	107%	66%	3000	
2 Ton																														
Acme 47.....	2500	144	162	P 32x6	DP32x6	Con 16C	4-3 3/8x4 1/2	27.3	L	PC	Non	Per	Str	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Acorn 40.....	2600	162	182	P 32x6	DP32x6	Con 16C	4-3 3/8x4 1/2	27.3	L	PC	Non	Chi	Zen	G	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Am. La France Chief.....	3650	192	Opt.	P 32x6	DP32x6	Ow	4-3 3/8x4 1/2	27.3	L	PC	Non	Chi	Zen	G	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Armstrong 40.....	149	187	187	P 30x5	DP30x5	Her OX	4-4 1/2x5 1/2	25.6	L	PC	Non	Non	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Atterbury 29C6.....	154	200	160	P 30x5	DP30x5	Bud HS	6-3 3/8x4 1/2	27.3	L	PC	Non	Fed	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Autocar SD.....	1985	145	162	P 32x6	DP32x6	Lye 45L	6-3 3/8x4 1/2	27.3	L	PC	Non	Fed	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Brookway 8YW.....	3000	150	192	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Brookway 8YW.....	1500	135	164 1/2	P 32x6	DP32x6	Wau Y	4-4 1/2x5 1/2	33.7	L	PC	Non	Chi	Zen	G	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Chicago 20A.....	1395	135	195	P 32x6	DP32x6	Wau Y	4-4 1/2x5 1/2	33.7	L	PC	Non	Chi	Zen	G	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Chicago 21A.....	1395	135	195	P 32x6	DP32x6	Wau Y	4-4 1/2x5 1/2	33.7	L	PC	Non	Chi	Zen	G	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Clinton 45.....	62	Opt.	186	P 34x7	DP34x7	Bud KX	4-4 1/2x5 1/2	28.9	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Cleland 9.....	160	160	144	P 34x7	DP34x7	Con S4	4-4 1/2x5 1/2	28.9	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Coleman C-25.....	3240	183	109	P 32x6	DP32x6	Bud DW6	6-3 3/8x4 1/2	27.3	L	PC	Non	Ow	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Commer 40Z.....	185	185	185	P 32x6	DP32x6	Bud DW6	6-3 3/8x4 1/2	27.3	L	PC	Non	Ow	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Concord GX-6.....	150	198	181	P 32x6	DP32x6	Con 16C	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Coburn 646.....	150	181	186	P 32x6	DP32x6	Con 16C	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Coburn 98B.....	155	186	186	P 32x6	DP32x6	Con 16C	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Day-Elder HF.....	175	220	175	P 32x6	DP32x6	Con 16C	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Day-Elder HF.....	175	220	175	P 32x6	DP32x6	Con 16C	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Defiance T169T.....	1690	157 1/2	170	P 32x6	DP32x6	Her WXB	4-4 1/2x5 1/2	28.9	L	PC	Non	Ow	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54000H	S	S	6.8	32.6	132%	82%	4350	
Dodge Brothers.....	1445	114	114	P 32x6	DP32x6	Ow	6-3 3/8x4 1/2	27.3	L	PC	Non	Per	Zen	V	A-L	A-L	D. B-L	Tim 54000H	U	4	Blo	Tim 54								

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Key of abbreviations page 70

Trade Name and Model	General			Engine					Electrical System		Gearset		Universal (Make)	Rear Axle		Gear Ratios		Front Axle Make and Model	Steering Gear (Make)		Standard Wheelbase				
	Chassis Wheelbase (inches)	Maximum Wheelbase (inches)	Tire Size	Make and Model	Bore and Stroke	Valve Arrangement	Oiling System	Governor (Make)	Radiator (Make)	Fuel System		Type and Make		Location	No. of Forward Speeds	Type	Make and Model		Final Drive	Total Reduction in High	Total Reduction in Low	Brakes, Location	Cab to rear of frame	Cab to rear axle	Chassis Weight (lbs.)
										Carburetor (Make)	Fuel Feed (Make)														
4 Ton—Cont'd																									
Commer 80Z.	5330	175	S 38x6	S 38x6	S 38x14	Bud BA6	6-4 1/2x5 1/2	40 8 L	PC	Non	Own	Zen	V	A-L	A-L	7	Blo	Tim 65700DP	W	10.33	98.2	Tim 16302	Ros	144	8400
Corbett 80.	178		S 38x6	S 38x6	DP36x8	Con 20R	4-4 1/2x5 1/2	42 8 H	FP	Non	Per	Zen	V	D-R	D-R	7	Spi	Tim 65706D	W	Opt	Opt	Tim 16300	Ros	164	8140
Day-Elder K6.	178		S 38x6	S 38x6	S 38x12	Con 21E	4-4 1/2x5 1/2	38 4 L	FP	Sim	Per	Zen	V	Eis	Eis	7	Spi	Tim 65706D	W	Opt	Opt	Tim 16300	Ros	164	8140
Diamond 1800 6-wheel.	180		P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	45 9 L	PC	Han	G&O	Zen	V	D-R	D-R	4	Spi	Tim 65702D	W	10.33	56.26	Tim 16302	Ros	140 1/2	8290
Dodge 6-30.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L	PC	Wau	G&O	Zen	V	D-R	D-R	4	Pet	Tim 65000H	W	6.92	124.37	Tim 15733H	Ros	168	9300
Dodge 440.	5650	180 1/2	P 38x7	P 38x7	P 38x12	Her WXC	6-4 1/2x5 1/2	38 4 L																	

Coleman 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August, 1929

Gasoline Tractor-Trucks

**The Commercial Car Journal
and Operation & Maintenance**

Motor Bus Chassis Specifications

Key of abbreviations page 78

MAKE AND MODEL	GENERAL			ENGINE			ELECTRICAL SYSTEM			TRANSMISSION			REAR AXLE		FRONT AXLE	TIRES AND WHEELS			DIMENSIONS (in.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	WEIGHT			Make and Model	Bore and Stroke	Radiator Make	Carburetor Make	BATTERY		Generator and Starter Make	Voltage and Amp.	High M. P. H.	Low M. P. H.	Type and Make	Clutch	Make and Model	Universal Make	Number of Forward Speeds	Gearset	Make and Model	Brake Location	Make and Model	Steering Gear	TIRES AND WHEELS		Turning Radius (ft.)	Floor Height	Length	Width																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	Seating Capacity	Chassis Only	Chassis with Body					Recommended Body Allowance	Wheelbase															Make	Make					Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make	Make

Motor Bus Chassis Specifications—Cont'd

Model	15	22	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435	440	445	450	455	460	465	470	475	480	485	490	495	500	505	510	515	520	525	530	535	540	545	550	555	560	565	570	575	580	585	590	595	600	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700	705	710	715	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835	840	845	850	855	860	865	870	875	880	885	890	895	900	905	910	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000	1005	1010	1015	1020	1025	1030	1035	1040	1045	1050	1055	1060	1065	1070	1075	1080	1085	1090	1095	1100	1105	1110	1115	1120	1125	1130	1135	1140	1145	1150	1155	1160	1165	1170	1175	1180	1185	1190	1195	1200	1205	1210	1215	1220	1225	1230	1235	1240	1245	1250	1255	1260	1265	1270	1275	1280	1285	1290	1295	1300	1305	1310	1315	1320	1325	1330	1335	1340	1345	1350	1355	1360	1365	1370	1375	1380	1385	1390	1395	1400	1405	1410	1415	1420	1425	1430	1435	1440	1445	1450	1455	1460	1465	1470	1475	1480	1485	1490	1495	1500	1505	1510	1515	1520	1525	1530	1535	1540	1545	1550	1555	1560	1565	1570	1575	1580	1585	1590	1595	1600	1605	1610	1615	1620	1625	1630	1635	1640	1645	1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700	1705	1710	1715	1720	1725	1730	1735	1740	1745	1750	1755	1760	1765	1770	1775	1780	1785	1790	1795	1800	1805	1810	1815	1820	1825	1830	1835	1840	1845	1850	1855	1860	1865	1870	1875	1880	1885	1890	1895	1900	1905	1910	1915	1920	1925	1930	1935	1940	1945	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070	2075	2080	2085	2090	2095	2100	2105	2110	2115	2120	2125	2130	2135	2140	2145	2150	2155	2160	2165	2170	2175	2180	2185	2190	2195	2200	2205	2210	2215	2220	2225	2230	2235	2240	2245	2250	2255	2260	2265	2270	2275	2280	2285	2290	2295	2300	2305	2310	2315	2320	2325	2330	2335	2340	2345	2350	2355	2360	2365	2370	2375	2380	2385	2390	2395	2400	2405	2410	2415	2420	2425	2430	2435	2440	2445	2450	2455	2460	2465	2470	2475	2480	2485	2490	2495	2500	2505	2510	2515	2520	2525	2530	2535	2540	2545	2550	2555	2560	2565	2570	2575	2580	2585	2590	2595	2600	2605	2610	2615	2620	2625	2630	2635	2640	2645	2650	2655	2660	2665	2670	2675	2680	2685	2690	2695	2700	2705	2710	2715	2720	2725	2730	2735	2740	2745	2750	2755	2760	2765	2770	2775	2780	2785	2790	2795	2800	2805	2810	2815	2820	2825	2830	2835	2840	2845	2850	2855	2860	2865	2870	2875	2880	2885	2890	2895	2900	2905	2910	2915	2920	2925	2930	2935	2940	2945	2950	2955	2960	2965	2970	2975	2980	2985	2990	2995	3000	3005	3010	3015	3020	3025	3030	3035	3040	3045	3050	3055	3060	3065	3070	3075	3080	3085	3090	3095	3100	3105	3110	3115	3120	3125	3130	3135	3140	3145	3150	3155	3160	3165	3170	3175	3180	3185	3190	3195	3200	3205	3210	3215	3220	3225	3230	3235	3240	3245	3250	3255	3260	3265	3270	3275	3280	3285	3290	3295	3300	3305	3310	3315	3320	3325	3330	3335	3340	3345	3350	3355	3360	3365	3370	3375	3380	3385	3390	3395	3400	3405	3410	3415	3420	3425	3430	3435	3440	3445	3450	3455	3460	3465	3470	3475	3480	3485	3490	3495	3500	3505	3510	3515	3520	3525	3530	3535	3540	3545	3550	3555	3560	3565	3570	3575	3580	3585	3590	3595	3600	3605	3610	3615	3620	3625	3630	3635	3640	3645	3650	3655	3660	3665	3670	3675	3680	3685	3690	3695	3700	3705	3710	3715	3720	3725	3730	3735	3740	3745	3750	3755	3760	3765	3770	3775	3780	3785	3790	3795	3800	3805	3810	3815	3820	3825	3830	3835	3840	3845	3850	3855	3860	3865	3870	3875	3880	3885	3890	3895	3900	3905	3910	3915	3920	3925	3930	3935	3940	3945	3950	3955	3960	3965	3970	3975	3980	3985	3990	3995	4000	4005	4010	4015	4020	4025	4030	4035	4040	4045	4050	4055	4060	4065	4070	4075	4080	4085	4090	4095	4100	4105	4110	4115	4120	4125	4130	4135	4140	4145	4150	4155	4160	4165	4170	4175	4180	4185	4190	4195	4200	4205	4210	4215	4220	4225	4230	4235	4240	4245	4250	4255	4260	4265	4270	4275	4280	4285	4290	4295	4300	4305	4310	4315	4320	4325	4330	4335	4340	4345	4350	4355	4360	4365	4370	4375	4380	4385	4390	4395	4400	4405	4410	4415	4420	4425	4430	4435	4440	4445	4450	4455	4460	4465	4470	4475	4480	4485	4490	4495	4500	4505	4510	4515	4520	4525	4530	4535	4540	4545	4550	4555	4560	4565	4570	4575	4580	4585	4590	4595	4600	4605	4610	4615	4620	4625	4630	4635	4640	4645	4650	4655	4660	4665	4670	4675	4680	4685	4690	4695	4700	4705	4710	4715	4720	4725	4730	4735	4740	4745	4750	4755	4760	4765	4770	4775	4780	4785	4790	4795	4800	4805	4810	4815	4820	4825	4830	4835	4840	4845	4850	4855	4860	4865	4870	4875	4880	4885	4890	4895	4900	4905	4910	4915	4920	4925	4930	4935	4940	4945	4950	4955	4960	4965	4970	4975	4980	4985	4990	4995	5000	5005	5010	5015	5020	5025	5030	5035	5040	5045	5050	5055	5060	5065	5070	5075	5080	5085	5090	5095	5100	5105	5110	5115	5120	5125	5130	5135	5140	5145	5150	5155	5160	5165	5170	5175	5180	5185	5190	5195	5200	5205	5210	5215	522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... August

days are hot days in a steel foundry but the virile automotive industry favors no season: every four hours day and night our electric furnaces tilt on their trunnions and pour their white steel into the waiting ladles. Our Metallurgist knows steel — he knows it chemically, physically, and analytically. Our Foundry Superintendent also knows steel — he knows it in terms of mass and weight and strength and utility. As opposite as the poles these two men work as one grading up the metal and holding down the waste, thereby producing electric steel of high quality at low cost. The age of steel is primarily the age of men who know, who can and who do.

Eugene B. Clark
President

J.A. WHITE
METALLURGIST

G.W. MERREFIELD
SUPT OF FOUNDRY

CLARK

SKYLINE VIEW OF
CLARK EQUIPMENT COMPANY Plant
AT BUCHANAN, MICHIGAN

•• **The wheel**
is ever the symbol of
progress. Each new
use has marked an
epoch in man's ad-
vancement.

This age of steel de-
mands a metal wheel
for its transportation
vehicles. It must be
true, light, strong,
and well designed for
quick servicing.

Clark wheels are
built by a unique
method which pro-
vides the maximum
of each desired factor.

They are built for
single and dual pneu-
matic tires, fronts
and rears; with or
without bearing as-
semblies as speci-
fied.

Our engineers will
confer with you on
your wheel problems
—Inquire!

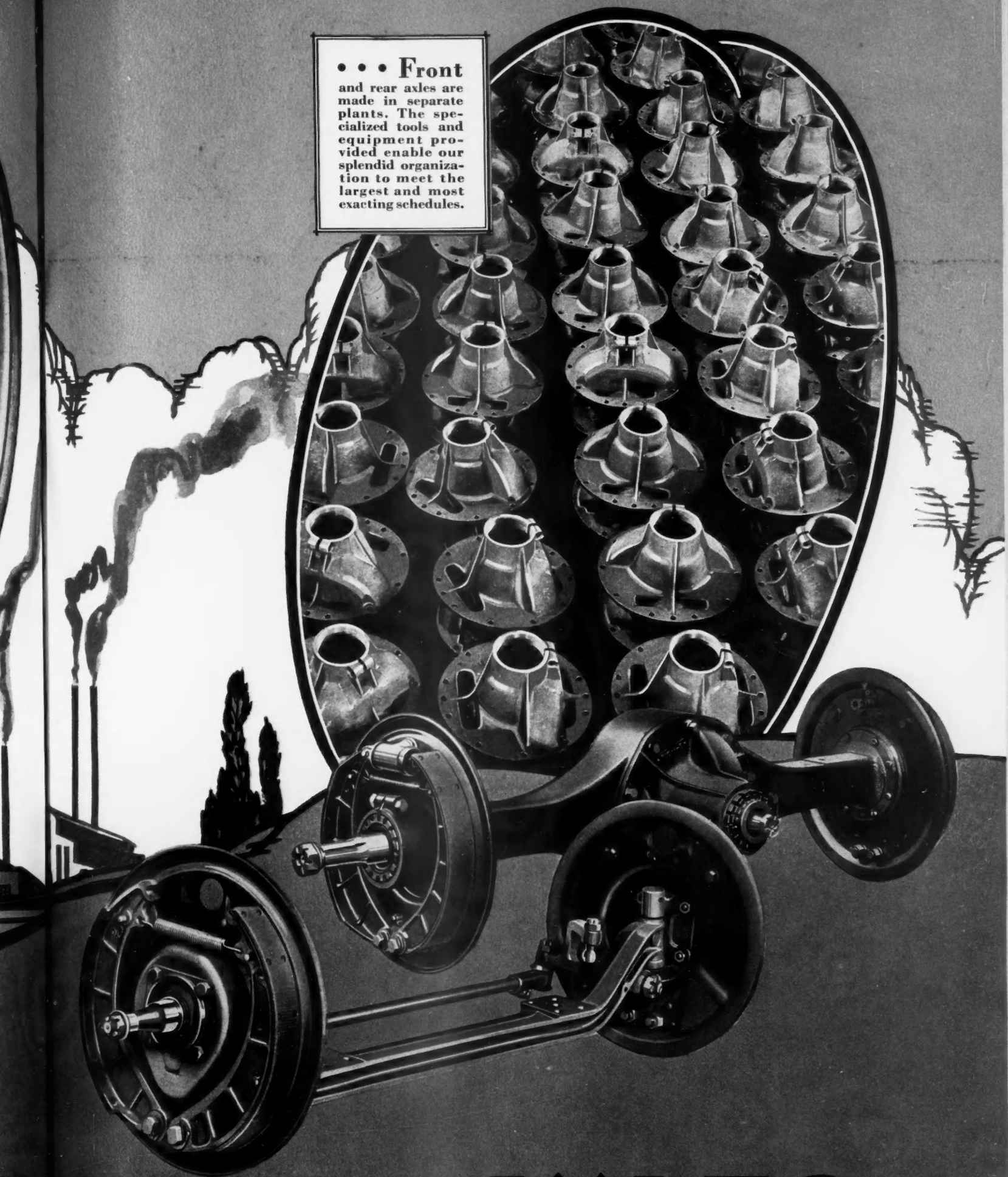
CLARK EQUIPMENT
COMPANY
Buchanan, Michigan



**CLARK
WHEELS**

• • • **Front**

and rear axles are made in separate plants. The specialized tools and equipment provided enable our splendid organization to meet the largest and most exacting schedules.



S AND AXLES

CLARK TRANSMISSIONS



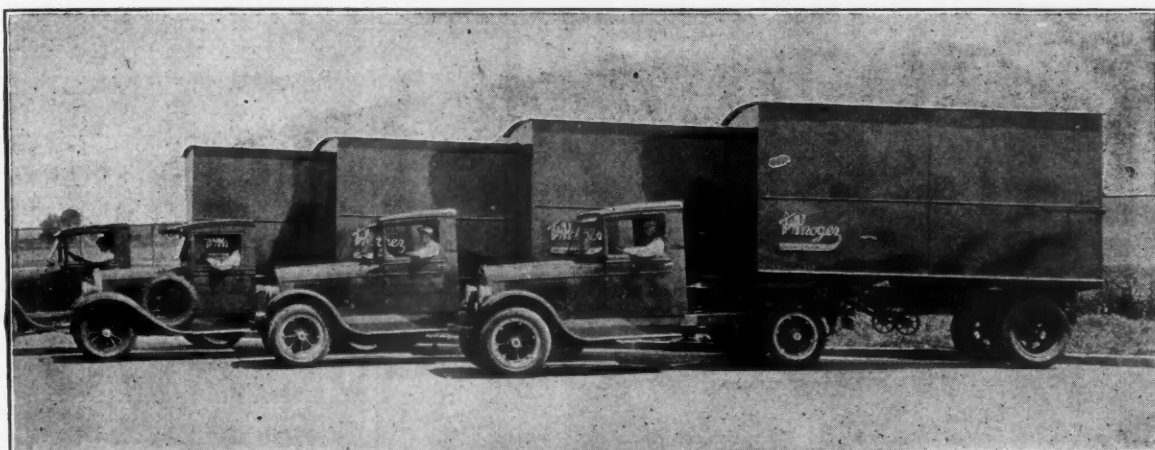
• • • **The continuous**
and smooth flow of power from engine to rear
axle is essential to efficient and satisfactory
operation of car or truck.

Multiple speed transmissions are the
vogue; the public demands lower driving gear
ratios and slower engine speeds, thus pass-
ing the perplexing problem to the builder of
transmissions.

**Make inquiry for information on Clark
Multiple Speed Transmissions.**

CLARK TRANSMISSION COMPANY
Berrien Springs, Michigan

MOTOR TRUCKS CAN PULL MORE THAN THEY CAN CARRY



These four units of the great fleet of Fruehauf Semi-Trailers in daily use for the Kroger Company are the famous Fruehauf "Flyers." With these jobs the carrying capacity of a one and a half ton truck is at once increased to three to five tons.

Approved by the Automotive Industry

Auburn Automobile Co.
Briggs Mfg. Co.
Budd Wheel Co.
Edw. G. Budd Mfg. Co.
Buick Motor Co.
F. Burkhardt Mfg. Co.
Cadillac Motor Car Co.
Chevrolet Motor Co.
Chrysler Motor Corp.
Chrysler Corp. of Canada, Ltd.
Continental Motors
Dodge Bros. Inc.
Fisher Body Corp.
Firestone Tire and Rubber
The B. F. Goodrich Rubber
Graham-Paige Motors
Hudson Motor Car Co.
Hupp Motor Car Corp.
Jordan Motor Car Co.
Miller Rubber Co.
Motors Metal Mfg.
Motor Products Corp.
Murray Corp of Am.
Nash Motors Co.
Packard Motor Car Co.
Reynolds Spring Co.
Seaman Body Co.
Sparks-Withington Co.
Studebaker Corp.
Ternstedt Mfg. Co.
Wood Hydraulic Hoist
& Body Co.

Fruehauf Trailers have been accepted and approved by the automotive industry—by the very men who are devoting their lives and gigantic financial resources to a mastery of transportation problems. "We must all admit that motor car manufacturers with their great efficiency have given us better cars for less money every year. They have set new standards in manufacturing and material handling, which have been copied by the whole world."

These are the men—experienced engineers and trained haulage men—who have put their stamp of approval on Fruehauf Trailers by purchasing and employing them year in and year out. They pass judgment on every item of equipment purchased by their companies. They are in a position to know the exact quality of material and workmanship. They know modern haulage systems. And all of these men—(their firm names are listed on the left) located in the very center of the motor industry are Fruehauf users.

Here is Your Opportunity

Selling Fruehauf Trailers is profitable business, for one Fruehauf sale almost always leads to many more. As a matter of actual fact, more than fifty per cent of the Fruehauf Trailers sold each year, are sold to satisfied Fruehauf owners. And, you know that repeat orders are the real profit builders. Results sell Fruehaufs. These experienced customers—many of them nationally known as leaders in their field—buy Fruehaufs—and buy and buy again because Fruehaufs stand up and deliver pay loads for the lowest cost per mile. Investigate this profitable Fruehauf Trailer idea. It is a business builder. Interesting details on request.

Semi-Trailers, Four-Wheel Trailers, Adjustable Pole Trailers and Heavy-Duty Carryalls

FRUEHAUF TRAILER COMPANY

Oldest and Largest Manufacturers of Trailers

Branches and Distributors In All Principal Cities

10957 HARPER AVENUE ♦ DETROIT, MICHIGAN

BUDA PERFORMANCE

**"30,000 miles
no mechanical trouble"**

FRED G. REDMON
CONTRACTOR
YAKIMA WASHINGTON

May 1, 1929

Kenworth Motor Truck Company
Yale Avenue and Mercer Street
Seattle, Washington

Attention: Mr. Vernon A. Smith, Vice President
Gentlemen:

In reply to your letter of April 26, asking for my experience with Buda Motors, I wish to say it has been most satisfactory.

The four Kenworth Motor trucks you delivered to me not so long ago are operating twenty hours a day, with a total of about 30,000 miles to date, and have no record of a single moment lost on account of any mechanical trouble.

The trucks have made exceptionally good and this accounts for the repeat order for two new Kenworth trucks you are about to deliver me.

Yours very truly
(signed) Fred G. Redmon.

Mr. Redmon is so pleased with the Buda 20 hr. day performance that he has already ordered two additional Kenworth trucks. Snow and ice do not stop Buda Performance.



THE BUDA COMPANY

HARVEY (Chicago Suburb) ILLINOIS

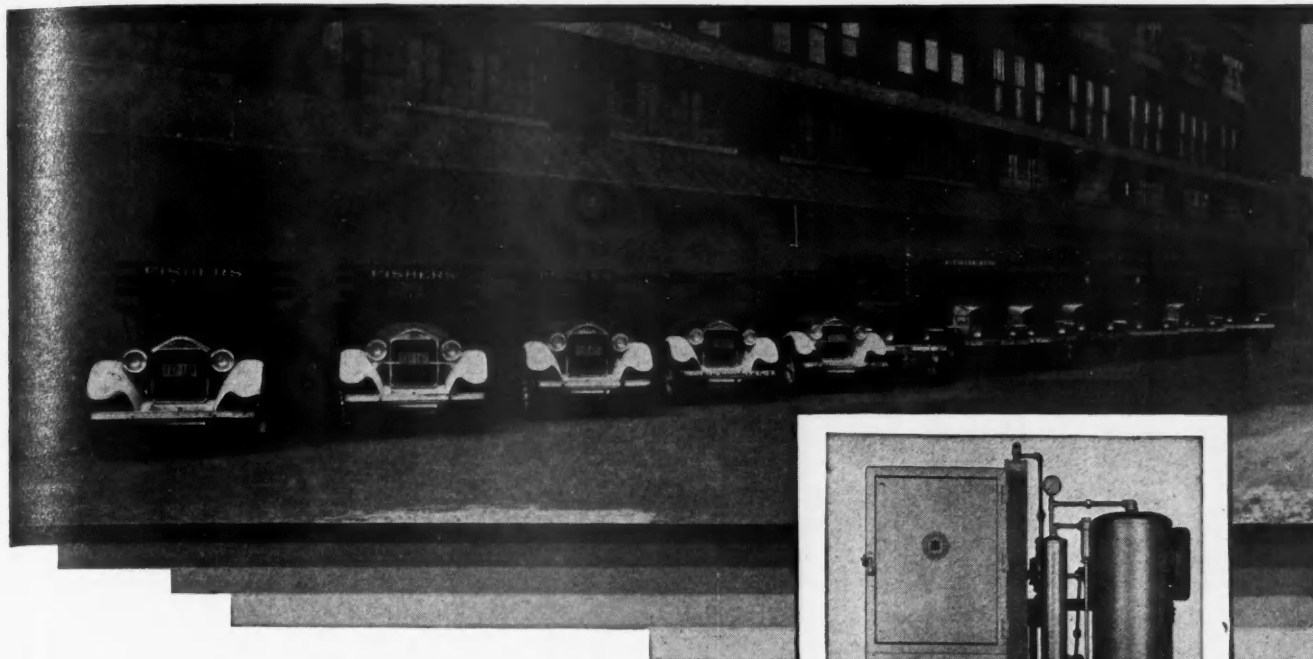
Members of Motor Truck

BUDA
POWER

Industries, Inc., of America

August, 1929

The Commercial Car Journal
and Operation & Maintenance

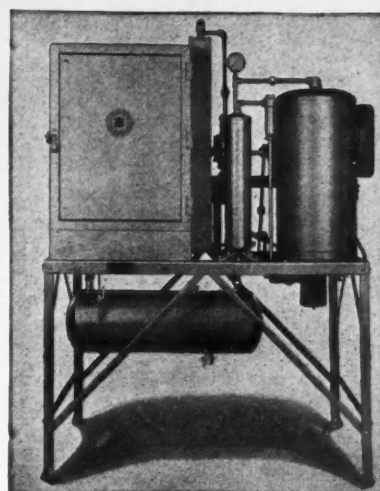


Fisher finds oil does not wear out

....used same oil in 65
trucks for 2 years

The letter on the right tells its own story very forcefully. Skinner Oil Reclaimer tells *its* own story in long, continuous operation . . . reclaiming the same oil over and over . . . at such a surprisingly low cost that leading cooperative fleet owners as well as individual operators and owners have found it worth while to investigate the economy in Skinner Oil Reclaimers. Write:

SKINNER AUTOMOTIVE
DEVICE CO., INC.
2229 Dalzelle, cor. 14th, Detroit, Mich.



HARRISON F. FISHER
JOSEPH SALMON, T.

LAND WAREHOUSE
(LAKESIDE AVE.)

THE FISHER BROS. CO.
WHOLESALE GROCERS
CLEVELAND, OHIO

June 27, 1929

Skinner Automotive Device Co.
2285 Dalzelle Avenue
Detroit, Michigan

Gentlemen:

In regard to Skinner Oil Reclaimer. We are indeed very much satisfied with results obtained from same.

We have about 65 motor vehicles in use at the present time and travel approximately 75 miles a day per unit.

Our consumption of oil since installing the Reclaimer has been cut approximately 50%. Our cost of reclaiming same costs 4¢ per gallon (which is due to low rating on electricity).

We are unable to say how often the same oil has been reclaimed, but we can say it never wears out, and was reclaimed many times in the two years we have been operating the Skinner Oil Reclaimer.

We wish to state that any time you wish to demonstrate our machine to any prospect in this vicinity, we will be glad to have you do so without any obligation whatsoever.

Very truly yours,

THE FISHER BROS. CO.

H. J. Fisher

SKINNER OIL RECLAIMER



LONG

LONG MANUFACTURING CO.
DETROIT MICHIGAN

LONG PRODUCTS—AUTOMOTIVE CLUTCHES AND RADIATORS

EVER-CHANGING

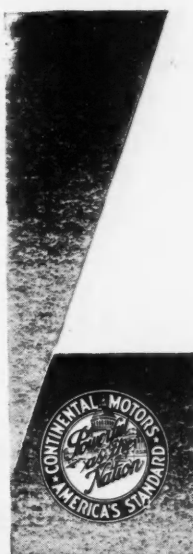
Small scale production can seldom afford the constant change in facilities so necessary to keep up with the progress of the industry. Expensive development is often beyond the smaller manufacturer's margin of profit. He turns to Continental, where every motor—be it on an order for one or a hundred thousand—receives the full benefit of the most complete facilities and intelligent research known to the annals of gasoline motor construction.

CONTINENTAL MOTORS CORPORATION

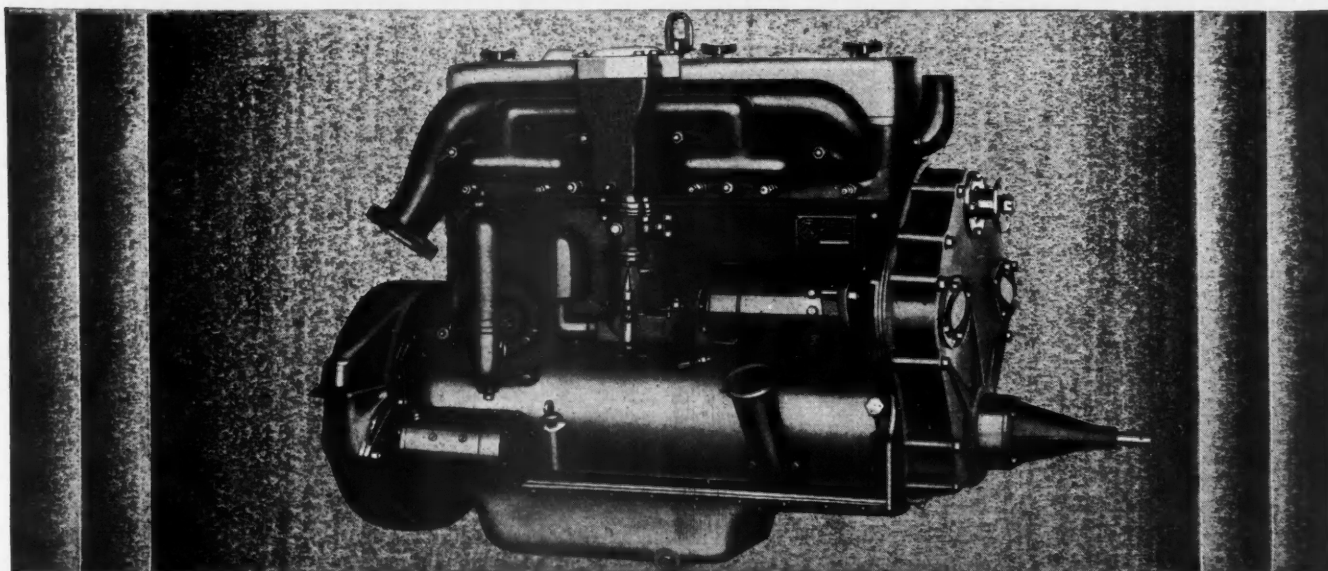
Offices: Detroit, Michigan, U. S. A.

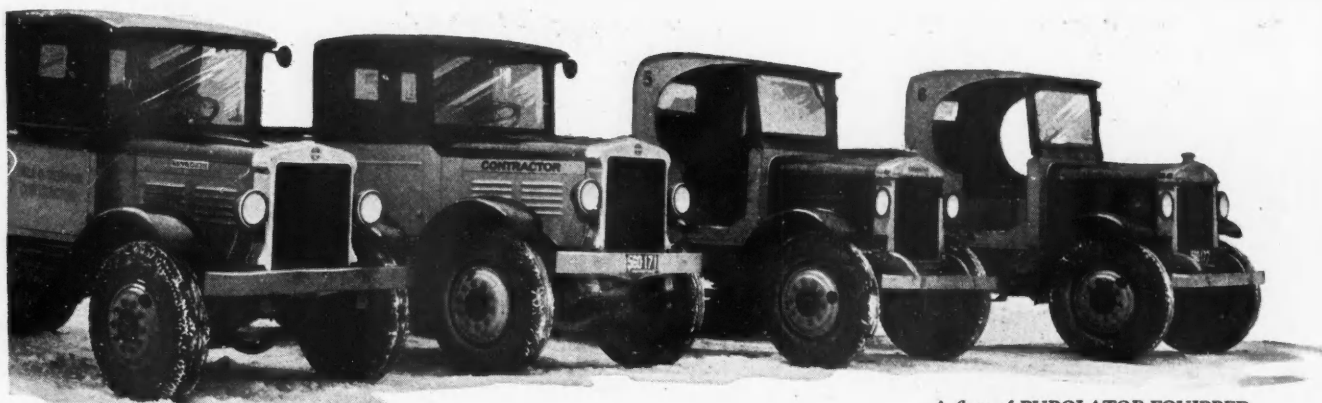
Factories: Detroit and Muskegon

The Largest Exclusive Motor Manufacturer in the World



Continental Motors





A fleet of PUROLATOR-EQUIPPED KENWORTH MOTOR TRUCKS owned and operated by Fred G. Redmon, Contractor.

Clean Oil CUTS COSTS FOR THIS FLEET OWNER

NOWHERE is the necessity for *clean oil* more pressing than in truck and bus operation. Gruelling service over dust laden roads for long hours at a stretch imposes a heavy responsibility on the lubrication system—a responsibility it cannot meet unless the oil supply is kept clean.

In a few moments dirty oil can cause far more expensive damage than is caused by thousands of miles of normal wear and tear. And repair expense is not the worst of it. Layups are even more costly. Trucks and buses laid up for repairs are losing money every moment they are kept off the road.

The Purolator prevents the costly, wasteful wear and layups due to dirty oil. It filters the oil, *as it is used*, extracting all the harmful foreign matter and sends back to the crank case an ample supply of *clean oil*—free from abrasive matter.

If your trucks or buses are not now Purolator-equipped it is a simple matter to install Purolators on them. For full information address: Motor Improvements, Inc., 368 Frelinghuysen Ave., Newark, N. J.

Licensed under Sweetland Patents

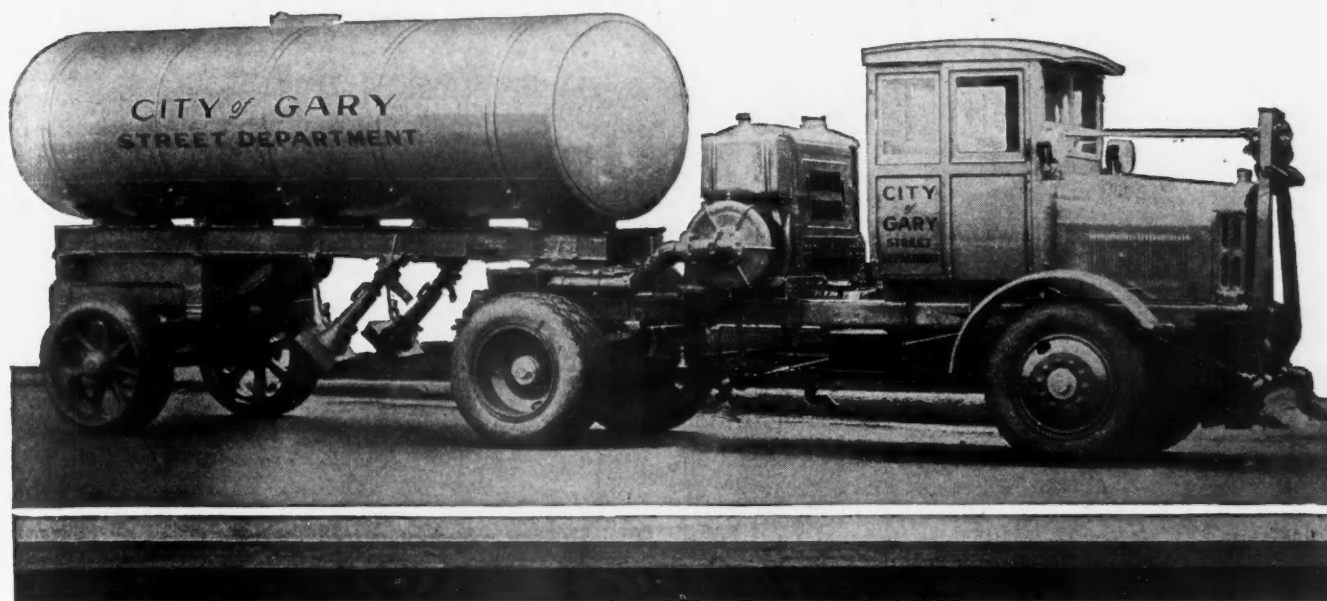
PUROLATOR

THE OIL FILTER

August, 1929



*The Commercial Car Journal
and Operation & Maintenance*



Jack of all trades / / / master of each!

F.W.D. has developed this huge unit to handle eleven distinct jobs for the City of Gary, Indiana, that ordinarily would take separate machines:

1. Wash pavements.
2. Fight fires.
3. Oil roads.
4. Sprinkle dirt roads.
5. Spray trees.
6. Plow snow.
7. Clean sewer inlets.
8. Empty flooded basements.
9. Grade roads.
10. Haul garbage trailers, etc.
11. With body, a commercial truck.

For "stepping up" the power necessary to operate this massive outfit, a five-speed transmission is used equipped exclusively with New Departure Ball Bearings.

Any mechanism called upon for constant use must not be laid up for servicing. Hence the choice of New Departures in inaccessible locations where it would cost more to "get at" to adjust or replace a bearing than the cost of the bearing itself.

The New Departure Manufacturing Company, General Offices and Main Works at Bristol, Connecticut. Engineering and Sales Offices at Detroit, Chicago, San Francisco, and London, England.

NEW DEPARTURE BALL BEARINGS 1269



INTERNATIONAL

EXPERIENCE SPEAKS



"By reducing our hauling costs to exceptionally low figures International Trucks have had an important bearing on our profits"

This unsolicited testimonial, based on the costs sheets of a great business, gives the facts about International Trucks and International Service in a nut shell. You couldn't ask for a better reason for using them in your business.

This endorsement comes from the Hathaway Bakeries, Inc., whose headquarters are in Boston. In New York and New England they operate 196 International Trucks, and experience speaks when they say:

"We have found the International Harvester Company a splendid organization with which to do business, and further, that our great fleet of International Harvester Trucks, by reducing our hauling costs to exceptionally low figures, has effected economies which have an

important bearing on the profits of our business."

We could tell you of the years of manufacturing experience that goes into every International—of the punishment given to experimental models on our testing grounds—of the improvements that are constantly being made in the line—but the proof of it all is in the profits these trucks are producing for their owners.

So go to an International Branch or dealer—there is one near you—select the International that meets your requirements—there is one for every hauling need. Try out the truck on your own job and you be the judge. There is no obligation.

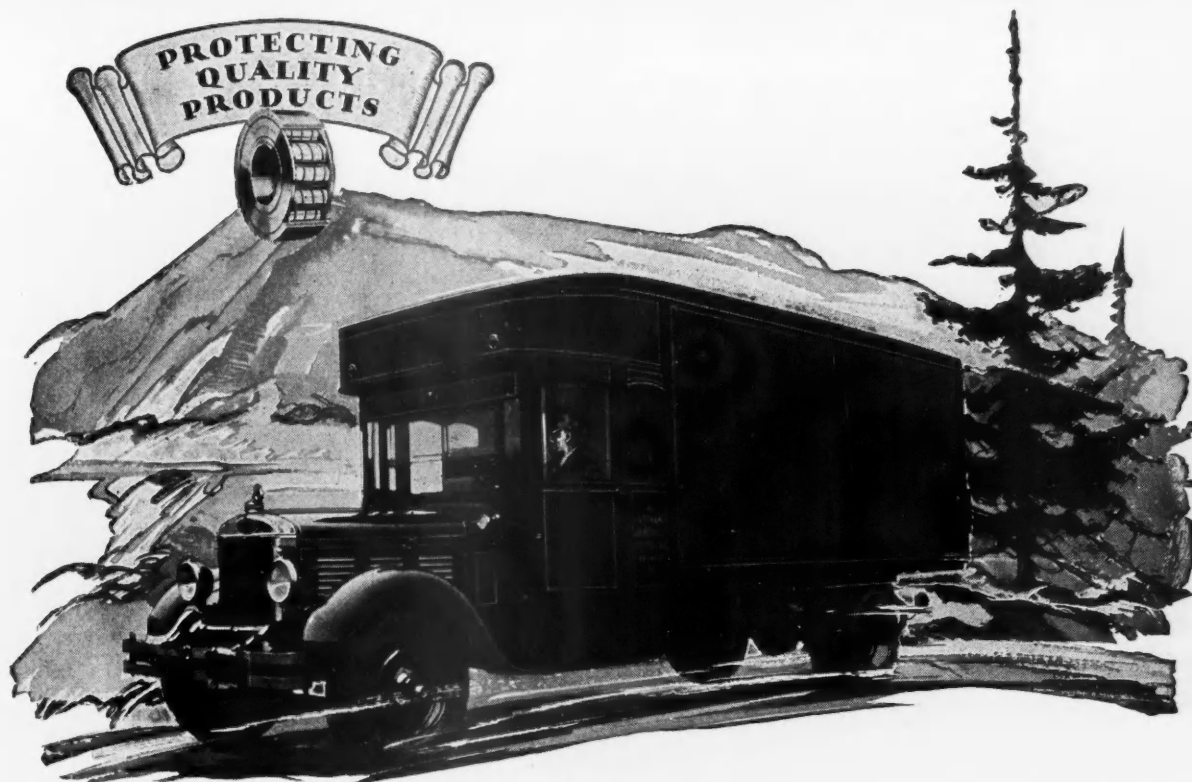
The International line includes the Special Delivery for loads up to ¾-ton; the 1-ton Six-Speed Special; 4 and 6-cylinder Speed Trucks of 1¼, 1½ and 2-ton sizes; Heavy-Duty Trucks ranging from 2½-ton to 5-ton sizes; Motor Coaches, and McCormick-Deering Industrial Tractors. Sold and Serviced by 172 Company-owned Branches in the United States and Canada, and dealers everywhere.

INTERNATIONAL HARVESTER COMPANY
606 SO. MICHIGAN AVE. OF AMERICA (INCORPORATED) CHICAGO, ILLINOIS

INTERNATIONAL TRUCKS

August, 1929

*The Commercial Car Journal
and Operation & Maintenance*



The 97-h. p. 6-cylinder Mack Truck travels the Hyattway

AT TEN different locations in transmission and steering gear assembly, Hyatt Quiet Roller Bearings insure silent, even, effortless, operation.

Mack Trucks, Incorporated, have used Hyatt Roller Bearings for the past 3 years, in accordance with a policy which limits the selection of specialized units to those of reputable manufacture and of highest quality.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland



"Official sign of
an authorized
Hyatt bearing
distributor"

HYATT

QUIET ROLLER BEARINGS



Modern fire apparatus can go fast only because it can stop fast. It can stop fastest with Bendix Brakes, standard on those awesome Ahrens-Fox pumpers, as on most other fire-fighting equipment.

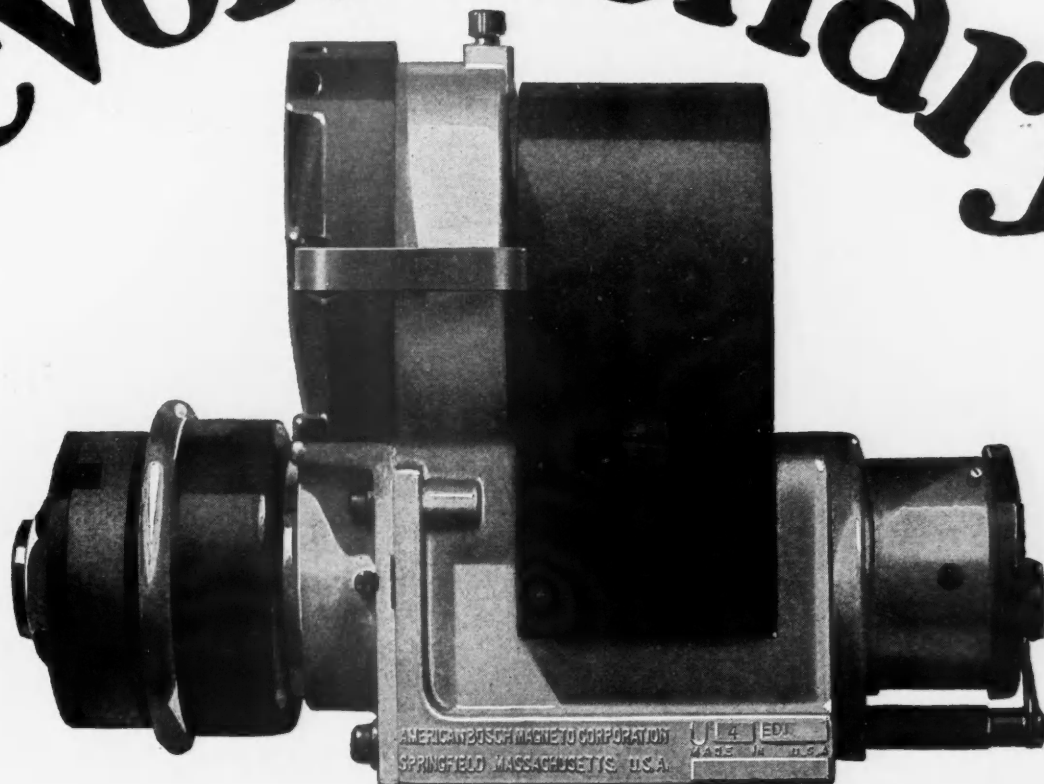
Bendix Brakes are favored for the effectiveness, the certainty and the freedom from attention which are

indispensable in this work. The same advantages mean extra value for you also, when you choose a Bendix-equipped truck or bus.

BENDIX BRAKE COMPANY
SOUTH BEND, INDIANA
(Division of Bendix Aviation Corporation)

BRAKES

revolutionary



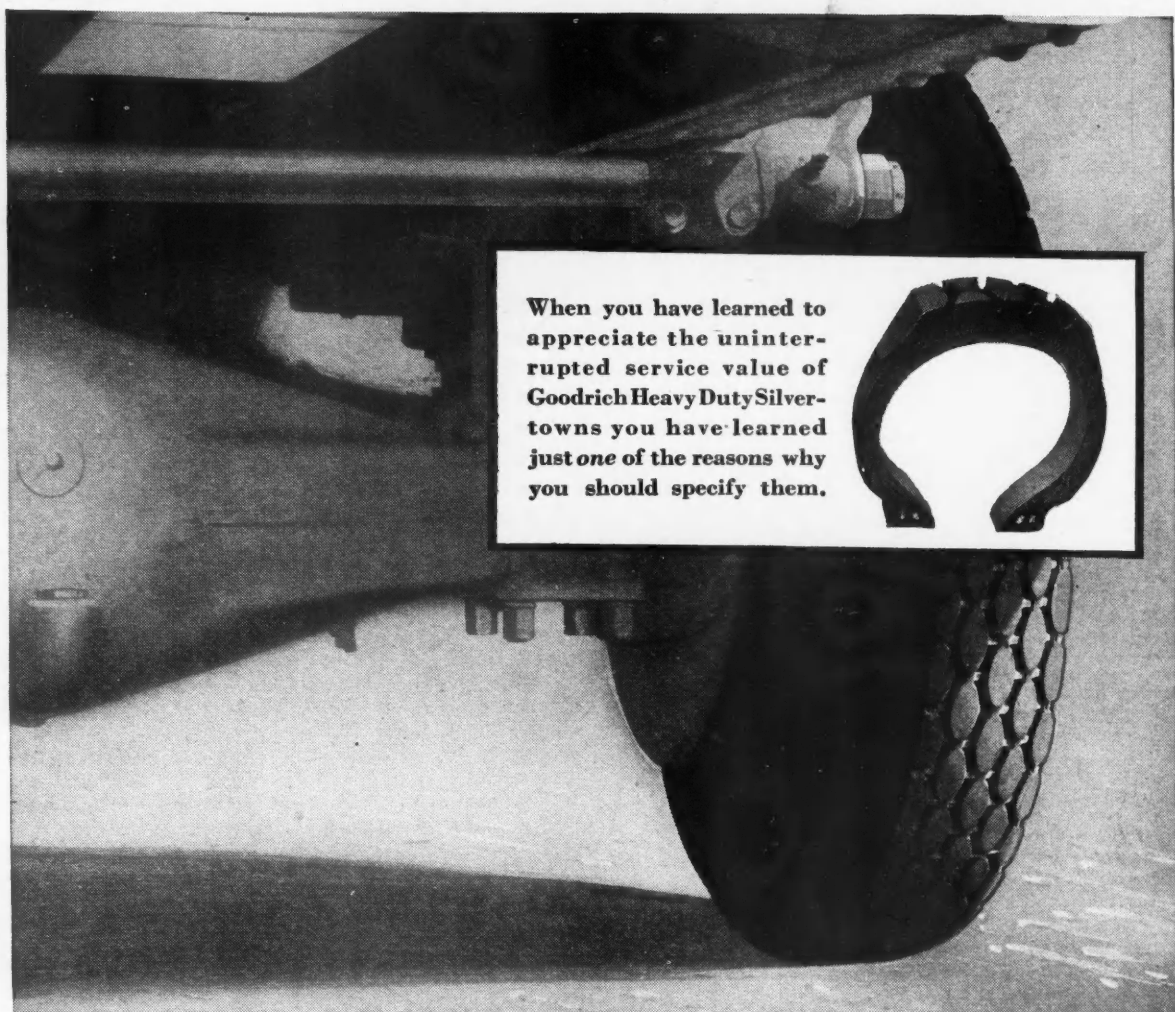
AMERICAN BOSCH

The new
U type

LIGHTER in weight, more compact and structurally better than any magneto heretofore produced, the new "U" type AMERICAN BOSCH Magneto has established new standards of operating efficiency and economy. It has been adopted as standard equipment by many of the foremost tractor and industrial engine makers throughout the country. The American Bosch "U" type magneto is sealed against all dust, dirt, moisture and oil. It cannot be overoiled. The bearings are lubricated and sealed at the factory. It is the modern magneto for modern motor equipment. Those who want trouble-proof magneto service will find the new "U" type the outstanding magneto of today. Write to us for the interesting details.

AMERICAN BOSCH MAGNETO CORPORATION
SPRINGFIELD, MASSACHUSETTS. BRANCHES: NEW YORK DETROIT CHICAGO SAN FRANCISCO

SPECIFY GOODRICH ON YOUR NEXT TRUCK



When you have learned to appreciate the uninterrupted service value of Goodrich Heavy Duty Silvertowns you have learned just one of the reasons why you should specify them.



Note the thick shoulder-to-shoulder tread rubber right WHERE the Goodrich Heavy Duty Silvertown STRIKES the road

Rubber where the Tire Needs it most!

THICK, tough rubber! "Water cured" right on down through stretch-matched cords to the innermost ply.

That's the way the Goodrich Heavy Duty Silvertown Tire is made! That's the BIG reason why Goodrich Heavy Duty Silvertowns outlast other tires on a mileage basis.

Rubber where the tire needs it most is just another way of summing up the seven specific reasons—the seven superior specifications—that make Goodrich

Tires give truck and bus operators longer *uninterrupted* service, greater *trouble-free* mileage!

When it comes down to a question of service and mileage, Goodrich Heavy Duty Silvertowns are your very best buy.

* * *

The B. F. Goodrich Rubber Company, Established 1870, Akron, Ohio. Pacific Goodrich Rubber Company, Los Angeles, Calif. In Canada: Canadian Goodrich Company, Kitchener, Ontario.

Seven Superior Specifications Built Into Every Heavy Duty Silvertown

1. Heavily insulated stretch-matched cords.
2. Additional *adhesion*—from greater insulation between outside plies.
3. Heavy *twin beads* for better rim seating.
4. Extra gum *fillers* between plies for longer tire life.
5. Heat-resisting, interlocking cord *breakers*.
6. Tread designed *correctly* for heavy duty service.
7. The whole tire toughened by the famous Goodrich "water cure."

Goodrich HEAVY DUTY Silvertowns



Announcing the NEW ATTERBURY MARATHON SIXES

DESIGNED, built and styled for the new and exacting requirements of present day truck users, these new Atterbury Marathon Sixes upset all old ideas of truck performance—and value.

Any way you look at them . . . appearance . . . power . . . speed . . . equipment . . . performance . . . they offer more truck per dollar.

With 2½, 3 and 4 ton capacities, 70, 80 and 90 horsepower, six cylinder seven bearing overhead valve motors, vacuum booster brakes, heavy duty pneumatic tires, with dual rears and Budd steel wheels, standard equipment, the Atterbury Marathon Sixes give complete mastery of the road and load.

Whether you sell trucks, own trucks, service trucks or drive trucks, Atterbury invites you to get the complete facts and figures on these new Atterbury Marathon Sixes. Write for complete specifications and prices.

ATTERBURY MOTOR CAR COMPANY, BUFFALO, N. Y.

THE 3-TON ATTERBURY MARATHON SIX

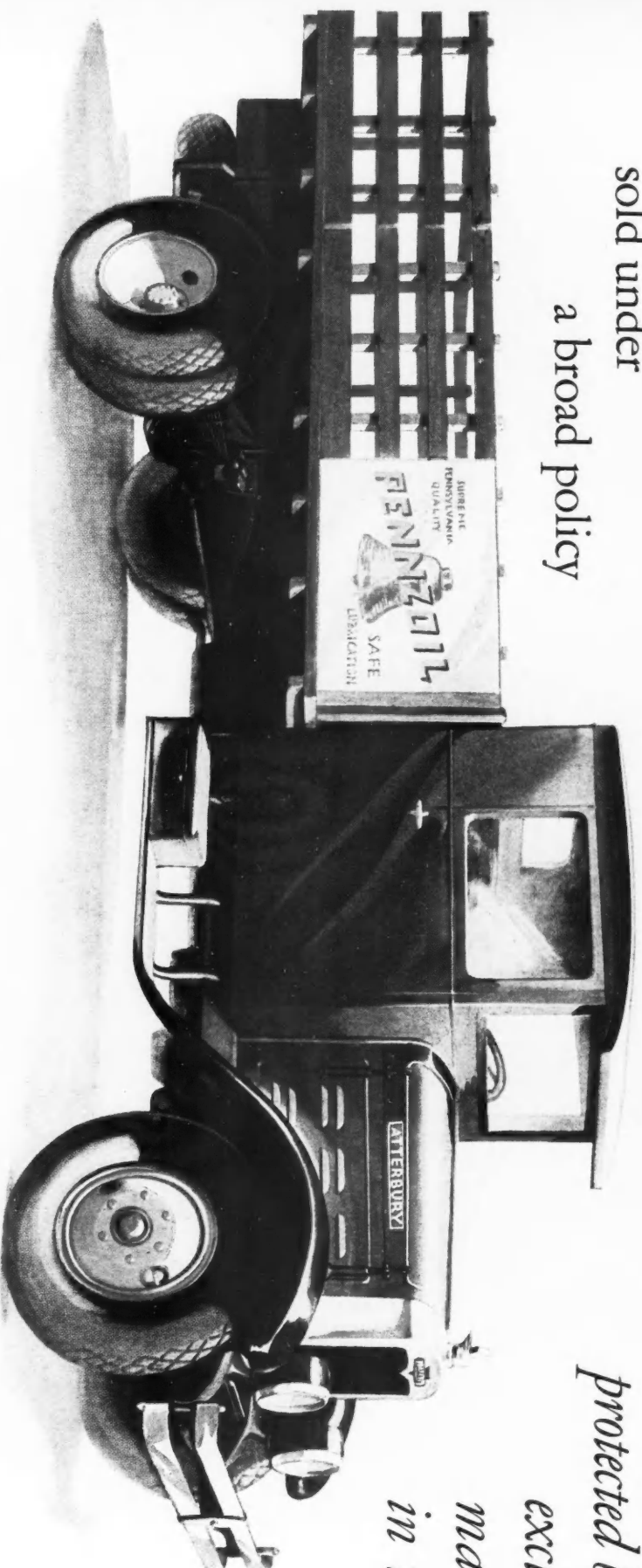


... and now turn to a new page in Atterbury History

New Atterbury Marathon Sixes

sold under
a broad policy

*protected by the oldest
exclusive truck
manufacturer
in the business*



FACTS every dealer will want to know

1. The new ATTERBURY comes from an assembly line that has delivered quality trucks exclusively to American business for more years than any truck manufacturer in existence. Dependability is hereditary with Atterbury.
2. The new ATTERBURY MARATHON SIXES will be sold under a new broad sales policy and merchandised through dealers exclusively. The dealers' franchise includes liberal discounts, generous territory, intensive cooperation backed with advertising and merchandising helps that make dealers make money.
3. The ATTERBURY over the years is known by its users for a quality of heavy duty performance seldom equalled in the industry. Atterbury's largest fleets have been built out of repeat orders.
4. The collective experience of years has been engineered into these new MARATHON SIXES. They are ATTERBURY at its best.
5. The ATTERBURY is well and substantially financed. Its record over twenty-six years merits the confidence of any dealer. Write for complete specifications and prices.

ATTERBURY MOTOR CAR COMPANY

BUFFALO, N. Y.

Why the man who changes the tires likes Goodyear type "K" rims

These eleven pictures show the remarkable ease with which the operation is performed



Opening Rim 1—Insert tool in notch near split. Push downward and toward center of rim.



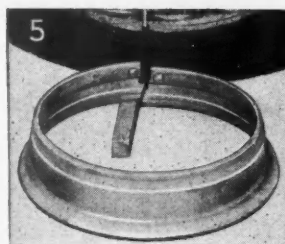
Opening Rim 2—Insert tool in second notch and push handle downward toward center of rim.



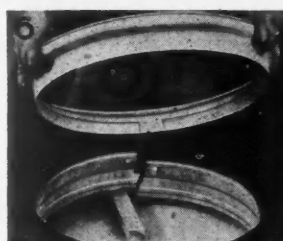
Closing Rim 1—Match valve notches in rim parts. Grasp and spread as shown. Hook end of split section on ring.



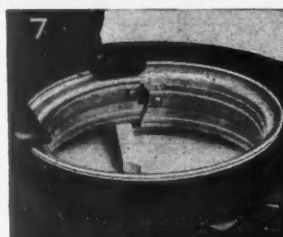
Closing Rim 2—Press split section into place and finish closing with kick or light blow downward and outward from center of rim.



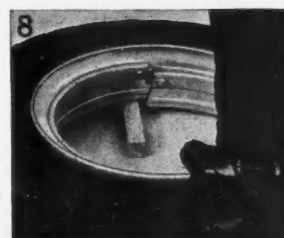
Applying Tire 1—Rest rim section on a 2-inch block as shown. Apply tire, valve pointing upward.



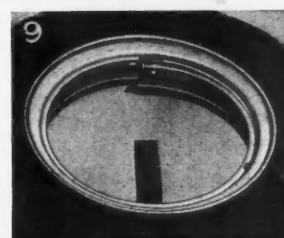
Applying Tire 2—Match up position of valve notches in each section of rim.



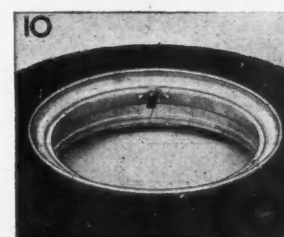
Applying Tire 3—Stand on ring section, near valve, to hook rim halves together.



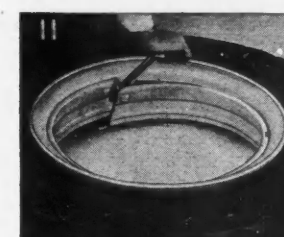
Applying Tire 4—Continue walking around rim.



Applying Tire 5—Close rim by dropping on block or with gentle blow from a 2-to-4-pound hammer.



Tire on Rim—Ready for inflating and mounting on wheel.



Removing Tire—Deflate and proceed as shown by Figs. 1 and 2.

For complete information, and full co-operation of its staff of engineers, write Goodyear, Akron, Ohio, or Los Angeles, California

GOODYEAR

Copyright 1929, by The Goodyear Tire & Rubber Co., Inc.

Type "K" Truck & Bus Rim Equipment

The Commercial Car Journal
and Operation & Maintenance

August, 1929

*Consider what
is behind*
**THERMOID
RELIABILITY**

**24 YEARS
EXPERIENCE in
BRAKE LINING**

*A Brake is only
as Reliable as its
Lining*



Thermoid
HYDRAULIC COMPRESSED... "F-M-L"... INTERWOVEN... "C-A-L"
BRAKE LINING
"For Short Stops and Long Service"

THERMOID RUBBER COMPANY - *Factories and Main Offices* - TRENTON, N. J.
Brake Lining—Transmission Lining—Radiator Hose—Clutch Rings—Universal Joint Discs—Mechanical Rubber Goods

August, 1929

*The Commercial Car Journal
and Operation & Maintenance*

WHEEL CHANGE-OVERS

What's it all about

Everywhere — fleet owners, hauling contractors, bus and truck operators do ask this question. Offhand opinions have proved very costly to many of them. They now know that a profitable changeover should be based on a knowledge of the truck and the job it is to perform. It really takes a specialist to tell you how this service can bring efficiency and economy to you.

Even though 85% of the trucks and buses now running would render better service with DUAL EQUIPMENT, yet, this is not conclusive proof that a changeover is the right thing for you.

For FREE inspection of your equipment and a correct recommendation — just visit any distributor or dealer displaying the emblem of the N. W. R. A. They are the official service representatives of manufacturers who supply the original equipment. You can be sure that for — changes, repairs or replacements — only standard makes of WHEELS, RIMS and PARTS will be used.

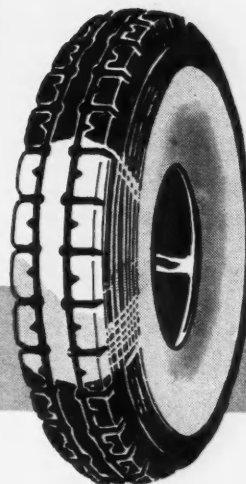
The name of the
N. W. R. A. member in
your territory sent on request.

NATIONAL WHEEL & RIM ASSOCIATION

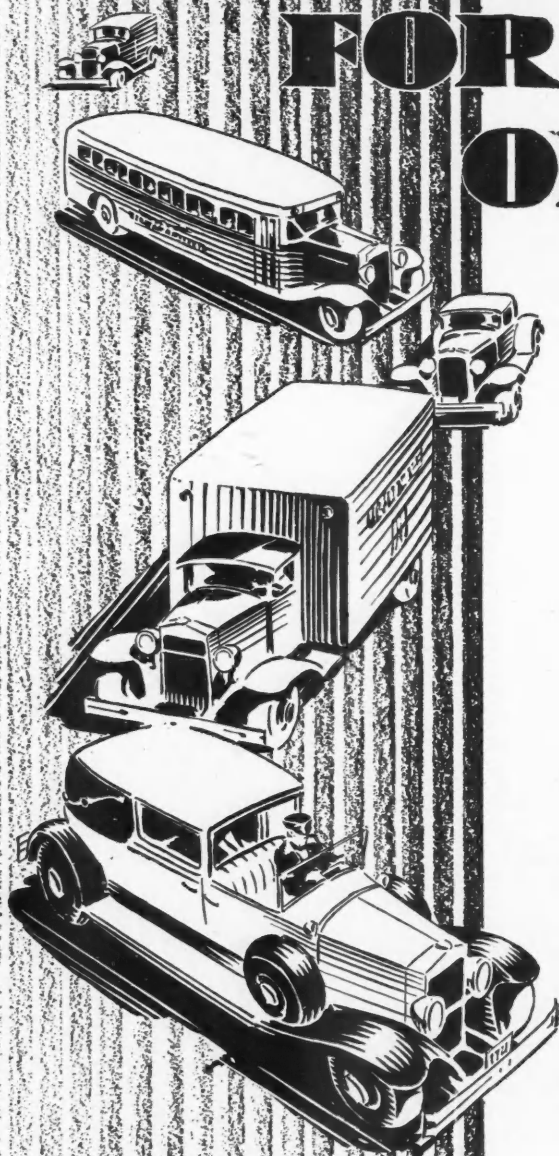
2600 Barlum Tower . . . Detroit, Michigan

AUTHORIZED FACTORY DISTRIBUTORS FOR

Budd Wheel Company	Firestone Steel Products Co.
Cleveland Welding Co.	United Motors Service
Motor Wheel Corp.	Kelsey-Hayes Wheel Corp.
Wire Wheel Corp. of Amer.	Goodyear Rim Division
Duplex Second Spare Tire Carriers	



There's a Firestone RIM FOR *Every Type* OF SERVICE



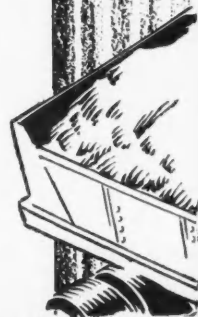
TRUCKS equipped with Firestone Rims experience no delays. Firestone Heavy Duty—long life Rims are recognized as economical units in truck and bus transportation.

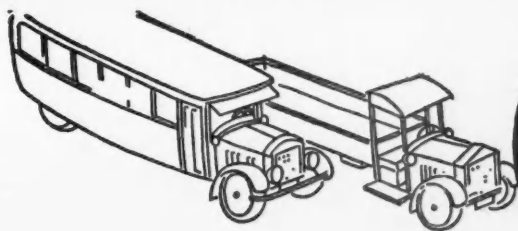
¶When new Rims or change in equipment is needed, Firestone Rims are near at hand. Distributors and warehouses are in principal cities. You get the Rims you want without delay, without uncertainty. Thus the Firestone Steel Products Company is constantly prepared to serve you.

¶Whether your choice of wheels is wood, disc, spoke or cast SPECIFY FIRESTONE RIMS.

**THE FIRESTONE STEEL
PRODUCTS CO.**

Firestone Park • Akron, Ohio





Only a Robert Bosch Vibro-Balanced Horn

*gives fleet owners ALL
of the 10 HORN essentials*

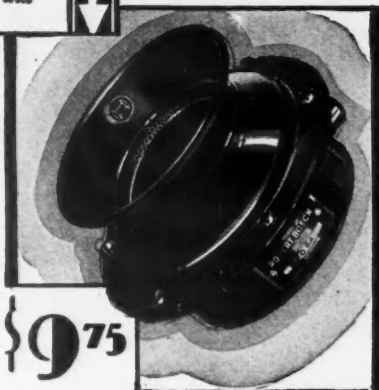


10 Horn Essentials

1. Authoritative tone that compels unquestioned right-of-way and immediate attention from pedestrians.
2. Instantaneous, hair-trigger response to the button. The split-second difference often prevents accidents.
3. Far reaching pitch which soars above traffic din; penetrates further on country roads.
4. Unfailing dependability which gives the driver restful confidence because he knows that his horn will not break down.
5. An even tone that will always maintain its well-rounded richness—a permanent tone that will not sound hoarse or husky, even after years of service.
6. A distinctive musical tone pleasing to all and offensive to none.
7. Effective warning even when the battery is not fully charged.
8. Weatherproof construction which defies rain, snow, dirt and dust, even when for greater effectiveness the horn is mounted outside instead of under the hood.
9. Freedom from need of service which makes lubrication or adjustment unnecessary.
10. Long life, which means a horn you will never have to replace.



Want to know more about the principle of Vibro-Balance and its importance to the fleet owner? Write for booklet giving all the facts. Robert Bosch Magneto Co., Inc., 3603F Queens Blvd., Long Island City, N.Y.



"IT'S the only horn which has never given us any trouble of any kind. We have never found it necessary to replace one after 4 years of service, or even make an adjustment."... "For dependability they are in a class by themselves—little care and lots of service."... "It is an excellent horn. The maintenance on the 8 we have has been very reasonable."

If you operate a bus... or a truck... or a fleet of them... take a tip from these fleet owner users of Robert Bosch Vibro-Balanced horns. For like them you too require a long-life horn... a horn that will last for years without need of service... a horn that you can depend on in rain or snow or fog or dirt or dust.

There are important constructional reasons why the Robert Bosch horn gives such unparalleled, uninterrupted, long-lasting service. It is the only horn that embodies the principle of Vibro-Balance... the only horn that combines the 10 essentials of horn satisfaction listed at the left.

Robert Bosch now offers you a complete line of Vibro-Balanced horns to choose from... for outside mounting or under the hood at a price range from \$17.75 down to \$9.75. Check the horn on your bus or truck against the 10 standards of horn performance. If it fails in one or more essentials, choose a Robert Bosch Vibro-Balanced horn and enjoy the carefree satisfaction born of the knowledge that your horn troubles are over.

Every Robert Bosch Horn is marked with the full name "Robert Bosch" and this trade-mark:



The Original
Bosch
ROBERT BOSCH PRODUCTS

The *NEW* **IDEAL** of *TIRE* Service

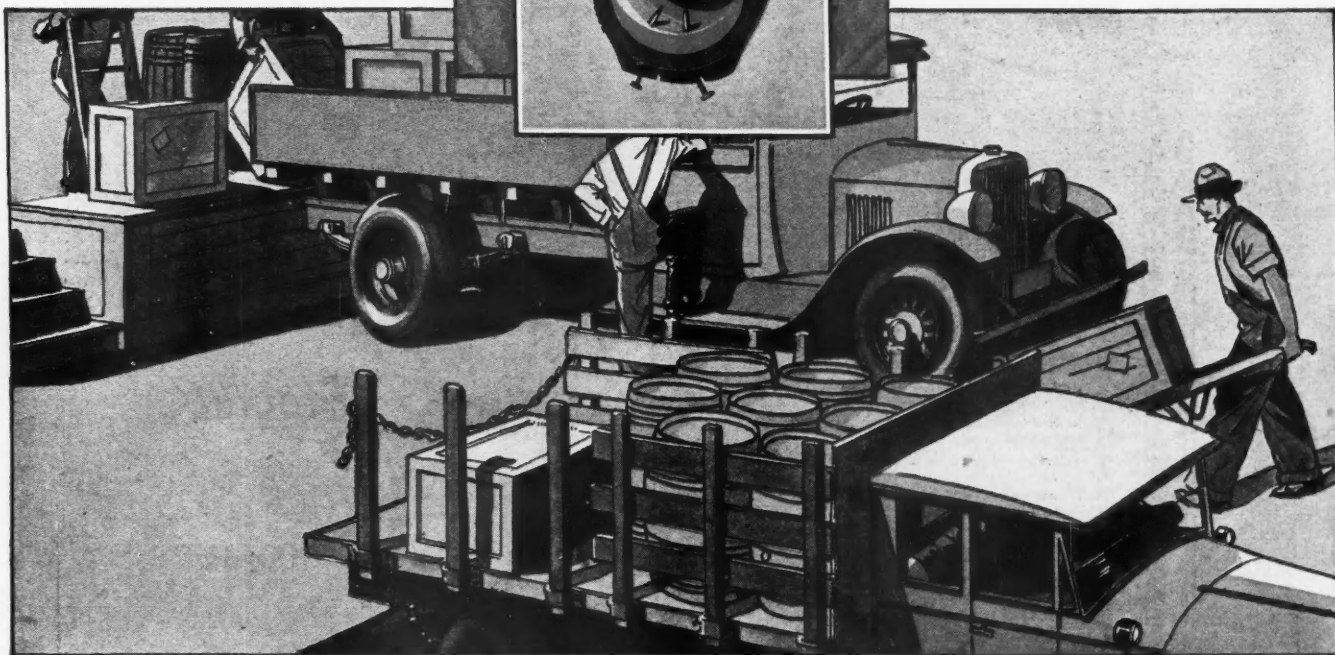
THE make of inner tubes used determines the degree of satisfactory service tires will give. No tire is better than its inner tube. It's the tube that holds the air which supports the tire. Puncture proof tube performance is vital to ideal tire service.

Not only do Brown Puncture Proof Tubes provide for freedom from punctures, but the very design and construction of Brown Tubes which eliminates the puncture hazard also gives

greater riding comfort and increased tire mileage.

Because uninterrupted trouble-free tire service is essential to reducing the operating cost of motor vehicles, Brown Puncture Proof Tubes are being specified as regular equipment by an ever increasing number of commercial fleet owners.

There is a Brown Tube dealer near you, ready to service your fleet. For full information, write **BROWN TUBE CORPORATION**, Graybar Bldg., New York City.

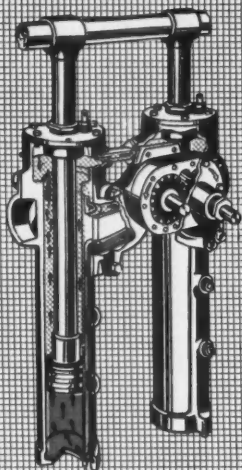
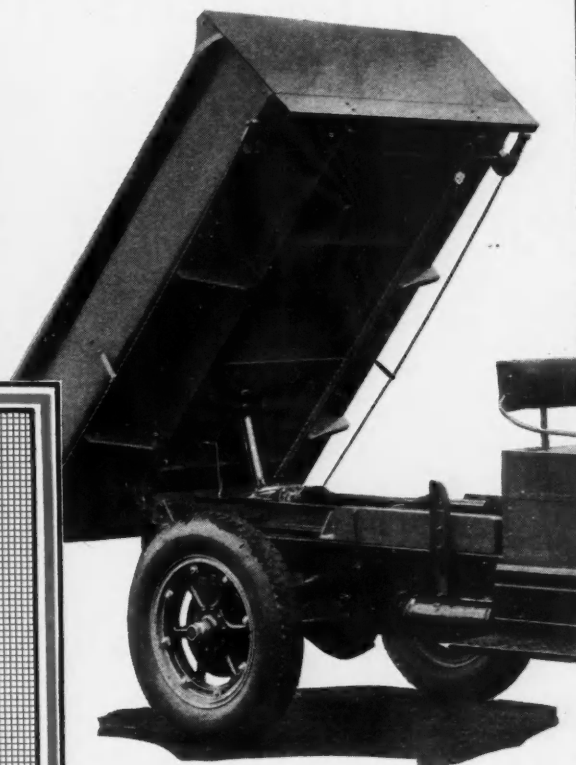


BROWN *Guaranteed* **PUNCTURE PROOF** **TUBE**

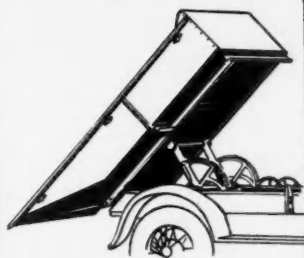
MADE IN

1-2-3-4-5-6

Sizes



(The No. 1 single cylinder Hydraulic Hoist unit. This model is for light duty trucks of 1 to 1½ ton capacity. Note the inset body subframe crossmembers which permits unusually low mounting.)



Above is illustrated the Heil Hand Hoist for mounting on light duty chassis. This Hoist is marketed as a unit comprising the Hoist, wood sills, body guides, hinges and a body selected from three standard models. It is shipped complete ready for mounting on the truck chassis frame. Building material merchants, coal dealers, municipalities with limited dumping requirements select Heil Hand Hoists for light duty trucks.

Heil literature is now available on the complete line of Heil Hydraulic Hoists, Heil Hand Hoists, Heil Hi-Lift Hoists, and Heil All Steel Dump Bodies. Send in a post card request for a set of these bulletins.

H EIL Hydraulic Hoists for motor trucks are made in six sizes for trucks of 1 to 10 ton rated capacity.

The selection of the correct size Heil Hydraulic Hoist for a given chassis and for a given load is important. In fact the buyer of hoists for motor trucks should be just as careful about the size hoist as he is about the rated capacity of the truck chassis. The Heil series of Hoists permits selection of a hoist best adapted for particular dumping requirements.

One outstanding feature of the 6 sizes of Heil Hydraulic Hoists

is the fact that each one operates on the same patented Heil principles—the lifting effort is exerted directly against the load during all angles of the dumping operation. This principle has proved itself correct, evidenced by the satisfactory service of thousands of Heil Hoists now in use the country over. Another outstanding feature is the Heil two year written guarantee which is given to the purchaser of every Heil Hydraulic Hoist.

Write for bulletin No. 160, which fully describes Heil Hoist construction in detail.

THE HEIL CO.

1401 MONTANA AVE.

MILWAUKEE

NEW YORK

BOSTON

Branch Offices
PHILADELPHIA

DETROIT

WISCONSIN

CHICAGO

DISTRIBUTORS IN ALL KEY CITIES

Putting the specifications before the Car Owner . .

Willard National Advertising urges the battery buyer to choose the known value of correct *electrical size* and built-in quality over the unknown value of claims and bargain prices. By emphasizing these known values, the importance of maintaining *original specifications* is brought home to the owners of the car, truck or bus you represent.

THE SATURDAY POST

WOULDN'T IT BE RIDICULOUS
TO PUT A TINY MOOD OVER A FINE BIG MOTOR?
IT IS EQUALLY ABSURD TO USE A BATTERY
THAT DOESN'T FIT ELECTRICALLY.



Open Your Eyes To The Facts of Battery Value

A battery may look large enough and have the correct number of plates, yet fall far short of fitting your car. Its electrical size is a determining factor in how long it will last.

Consult the Willard Chart at any of the 20,000 Willard Service Stations and learn the correct electrical size for your car. It will open your eyes to new facts about battery value.

Installing the correct electrical size means that your battery operates at its most efficient rate. It, therefore, means freedom from dangerous over-loading. It

improves, and makes more economical, your car manufacturer's recommendation of the importance of electrical size and specifies the battery for maximum value. The Willard Chart gives you the advantage of his experience and enables you to select your battery on the same engineering basis.

Today's Willard Battery is the masterpiece of 25 years' experience in the building of over 20,000,000 batteries. In addition to electrical size, its built-in quality is also a known value and is therefore sold to more car owners than any other make.

THREAD-KUTTER FOR HARD DRIVERS

If your battery's voltage ever falls low, the Thread-Kutter will keep it up. This battery's automatic "kick" starts the car the moment the voltage drops. The Thread-Kutter is the most powerful and most efficient of the current-carrying power ever produced. It is sold to you.



Willard

STORAGE BATTERIES
CLEVELAND OHIO

83 Buyers in Every 100

With the Fargo Truck dealership, 83 per cent of all truck buyers are your prospects . . . Learn about the Fargo line of 6-cylinder $\frac{1}{2}$, $\frac{3}{4}$ and 1-Ton trucks—Chrysler built, Chrysler styled, attractively priced. Investigate the opportunity to share in another Chrysler success.

*Write or wire Fargo Motor Corporation, Detroit, Michigan,
for complete details of the truck line and the dealership.*

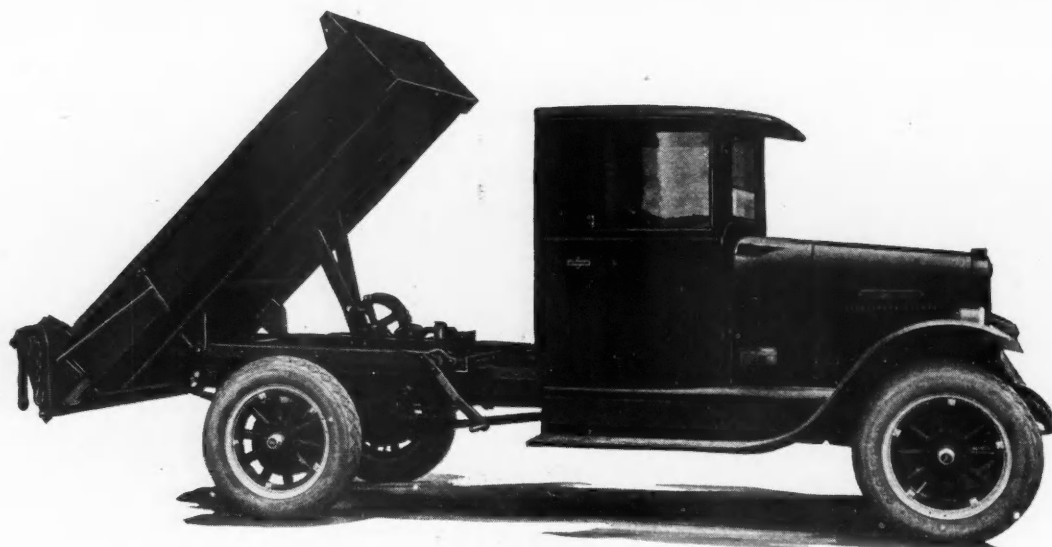
FARGO



C H R Y S L E R M O T O R S P R O D U C T

*The Commercial Car Journal
and Operation & Maintenance*

August, 1929



The Question is not "HOW MUCH?"



That Hughes-Keenan Dump Bodies are selling remarkably fast all over the United States and Canada is due—first, to the fact that they were designed with the user's point of view in mind—secondly, the line includes every wanted type: Quick-acting and Standard Hand Hoist Dumps, Roll-back and Standard Gravity Dumps, Electric Power Hoist Dumps, Special Coal Body and Garbage Bodies with hand hoist dumping mechanism. Hughes-Keenan also manufactures a Mechanical Power Hoist with capacity up to 7½ tons.

Mail Coupon

The Hughes-Keenan Company
Mansfield, Ohio
Gentlemen:

We're interested in seeing the advantages of Hughes-Keenan Dump Bodies. Please send us immediately folders describing the entire line.

NAME

ADDRESS

CITY STATE

August, 1929

WHEN it comes to dump truck buying the big thought is not price, but does the dump body truck meet these requirements:

Is the loading height low enough to permit efficient use of every type of loader and every method of loading?

Will the dump body stand the vicious grind demanded by construction work . . . the terrific jars and jolts of pot-hole going?

Is the dumping angle high enough to dump loads fast—clean—well clear of body and wheels?

Is the dumping mechanism sturdy, speedy, simple to manipulate . . . the body compact, snug-mounted, permitting every inch of chassis load space to be utilized?

Get our folders. See for yourself the dozen or more efficiency features and it will be instantly apparent why Hughes-Keenan Dump Bodies combine with truck chassis similar to Dodge Brothers, International and G.M.C. go to make and give the light truck buyer a remarkable dump truck unit at just the price he is prepared to pay.

Mail the coupon now. Let's cooperate to capture the light truck business in your section.

The Hughes-Keenan Company
Mansfield, Ohio

HUGHES-KEENAN

Steel Dump Bodies

The Commercial Car Journal
and Operation & Maintenance

Some Food for Thought in this complete line of GENERAL MOTORS TRUCKS

HERE you have the complete line-up of General Motors Trucks, as they are today. *Do you know of any truck line as complete—or even comparable? Do you know of any with four famous names guaranteeing high salability? Do you know of any backed by such magnitude and power of advertising? Do you know of any backed by such progressive policies—to simplify selling by safeguarding the buyer and clarifying his problem? Here and there General Motors Truck franchises are still available. Wherever they are available, they represent an opportunity—present and future—that can scarcely be over-estimated. It will pay you to inquire.*

GENERAL MOTORS TRUCK COMPANY, Pontiac, Michigan
Factory branches, distributors, dealers—in 1,500 principal cities and towns

THE capacities given are STRAIGHT RATINGS—the simple, modern rating-method that gives true capacities, based on maximum allowable total gross weights.

PONTIAC-powered

LIGHT DUTY

Type 1001.....	3,800 lbs.....	\$ 625
Type 2001.....	8,000 lbs.....	1015
Type 2002.....	8,000 lbs.....	975
Type 2003.....	6,000 lbs.....	895
Type 2004.....	8,000 lbs.....	1085
Type 2005.....	8,000 lbs.....	1045
Type 2006.....	6,000 lbs.....	965

BUICK-powered

MEDIUM and HEAVIER DUTY

Type 3001.....	10,000 lbs.....	\$1530
Type 3002.....	10,000 lbs.....	1505
Type 3003.....	8,000 lbs.....	1395
Type 3004.....	10,000 lbs.....	1570
Type 3005.....	10,000 lbs.....	1545
Type 3006.....	8,000 lbs.....	1435
Type 3007.....	10,000 lbs.....	1620
Type 3008.....	10,000 lbs.....	1595
Type 3009.....	8,000 lbs.....	1485
Type 4001.....	12,000 lbs.....	1885
Type 4002.....	12,000 lbs.....	1790
Type 4003.....	10,000 lbs.....	1685
Type 4004.....	12,000 lbs.....	1920
Type 4005.....	12,000 lbs.....	1825
Type 4006.....	10,000 lbs.....	1720
Type 4007.....	12,000 lbs.....	1935
Type 4008.....	12,000 lbs.....	1840
Type 4009.....	10,000 lbs.....	1735
Type 4010.....	12,000 lbs.....	1960
Type 4011.....	12,000 lbs.....	1865
Type 4012.....	10,000 lbs.....	1760
Type 5001.....	16,000 lbs.....	3215
Type 5002.....	18,000 lbs.....	3160
Type 5003.....	14,500 lbs.....	2800
Type 5004.....	16,000 lbs.....	3265
Type 5005.....	18,000 lbs.....	3210
Type 5006.....	14,500 lbs.....	2850
Type 5007.....	16,000 lbs.....	3280
Type 5008.....	18,000 lbs.....	3225
Type 5009.....	14,500 lbs.....	2865
Type 5010.....	16,000 lbs.....	3315
Type 5011.....	18,000 lbs.....	3260
Type 5012.....	14,500 lbs.....	2900


BIG BRUTE-powered

HEAVIEST DUTY

Type 6001.....	28,000 lbs.....	\$4250
Type 6002.....	28,000 lbs.....	4350

(All of above prices, chassis only,
F. O. B. Pontiac, Michigan)

A TRUCK FOR EVERY PURSE AND PURPOSE



"Brakes Are Shot Again, Bill"

An Accurate Lining Would Have Kept It On the Job

MODERN truck brakes are made to close tolerances and require an accurate lining--uniform in thickness--smooth surfaced.

Frequent readjustments are eliminated by perfect seating. Life is increased by uniform distribution of wear. But these can be obtained only in a lining of positive accuracy.

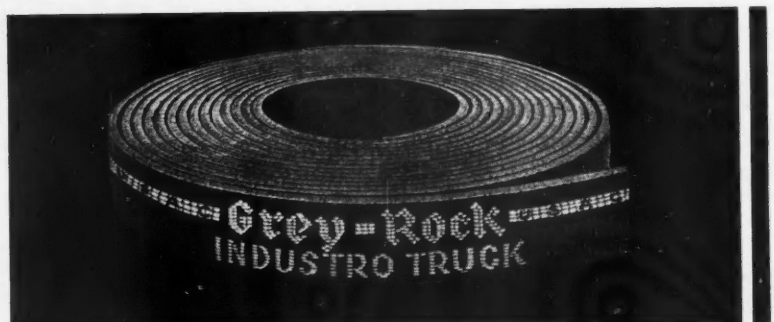
Grey-Rock Industro-Truck is extremely uniform in thickness (to a tolerance of .008 of an inch). It has a patented "smooth ground surface" (U. S. Pat. No. 1640373). It seats perfectly--giving virtually 100% contact at installation, without the usual "burning in" process. It can be accurately adjusted at installation and eliminates frequent readjustments.

Grey-Rock Industro-Truck is the heavy duty brake lining of micrometer accuracy. And accuracy in the lining you use will help to keep your trucks on the job. Write for the name of your nearest Grey-Rock jobber.

United States Asbestos Co. Manheim, Pa.

MICROMETER ACCURACY

An accurate micrometer check-up prevents any appreciable variation in the thickness of Grey-Rock Brake Lining. It is held to a tolerance of .008 of an inch.

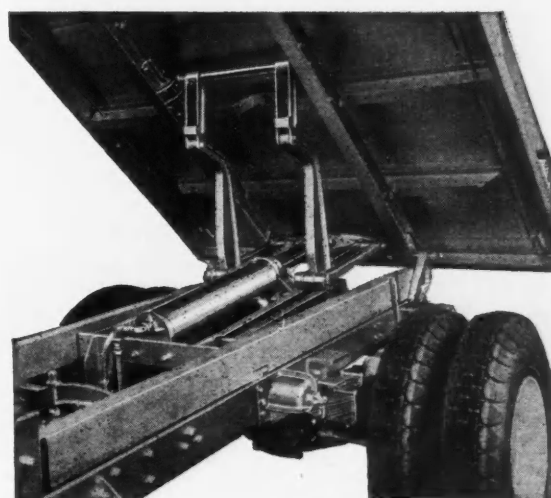




Two White Models 51A-134 W/B Chassis, equipped with Model 6UB St. Paul Underbody Hydraulic Hoists by the Ohio Truck Body & Wagon Co. of Cleveland, Ohio.

The Cost of Overloading

Install a St. Paul Hoist and you can practically forget about it. The factor of safety is extremely large to handle the *occasional* overload without breakdown. Continuous overloading is detrimental to the life of both your hoist and truck. Careful selection of your truck and hoist and body combination, for carrying a definite load, will increase your profits.



Close-up view of Model 6UB St. Paul Underbody Hydraulic Hoist on Autocar. Note high dumping angle for quick load discharge.

There is a St. Paul Hoist for every make and model of truck.

"Ask the Dump Truck Driver on the Job"

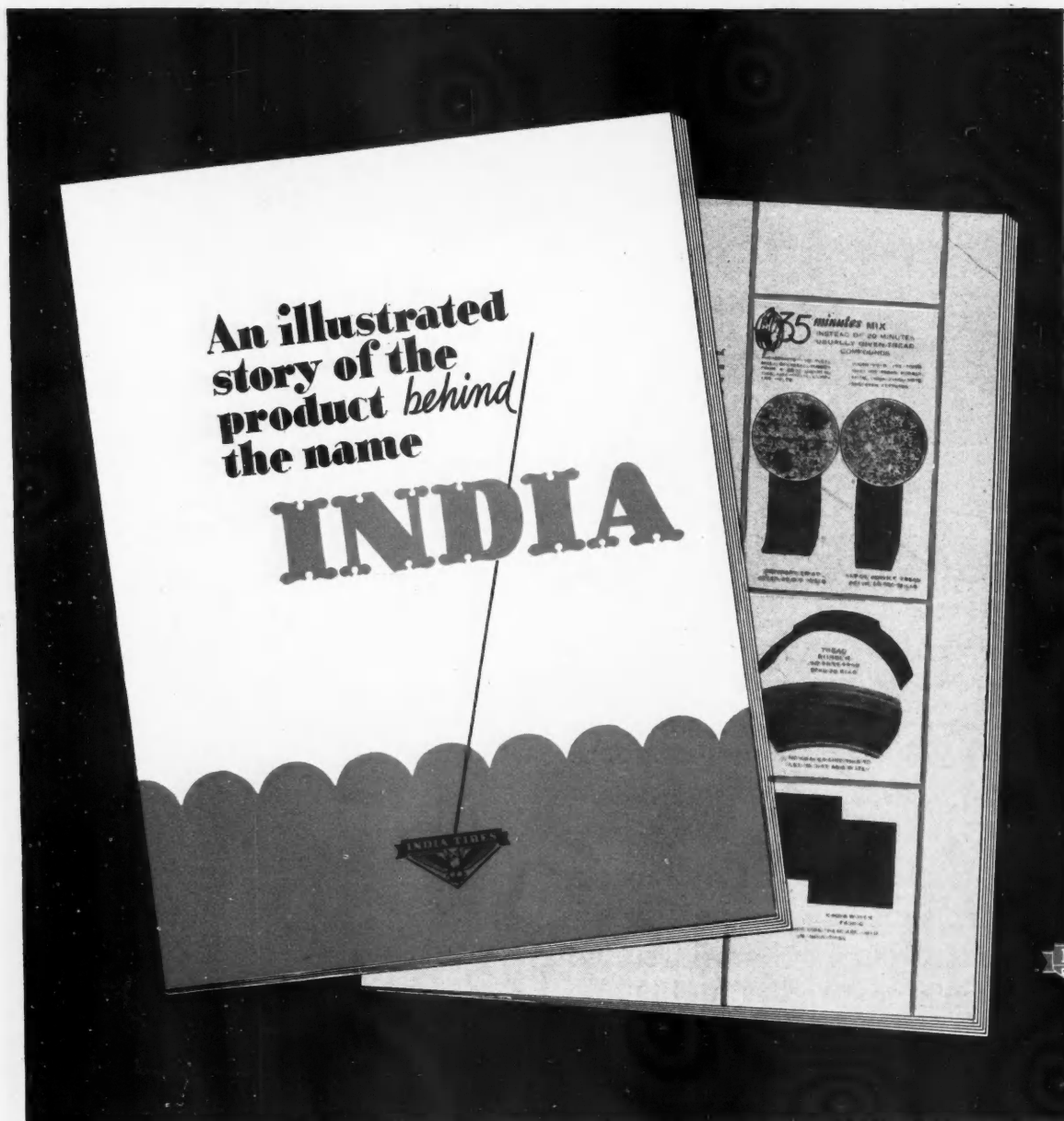
— St. Paul —

**VERTICAL AND UNDERBODY
HYDRAULIC HOISTS**

Hydraulic Hoist Manufacturing Co.

Factories at St. Paul, Minnesota

A St. Paul Hoist Distributor and Service Station is near you. Write for Name and Address.



WHY INDIA TIRES ARE BETTER

You know that you can't get more out of the tires you buy than the manufacturer puts into those tires at the factory.

We have claimed for years that India Tires are better than any other tires made and have proved it by tests and by service to the satisfaction of many commercial car owners. If you are not one of these who already know about India Tires, we want you to learn NOW—why India Tires are Better.

To show accurately and definitely the differences between India and other tires, we have, at considerable expense, had many authoritative tests made by independent research laboratories and have illustrated the results plainly in this new Products Book.

You will find this book full of interesting facts and pictures, showing what makes for high quality in a tire. It will help you check the claims made for any tires you are asked to buy.

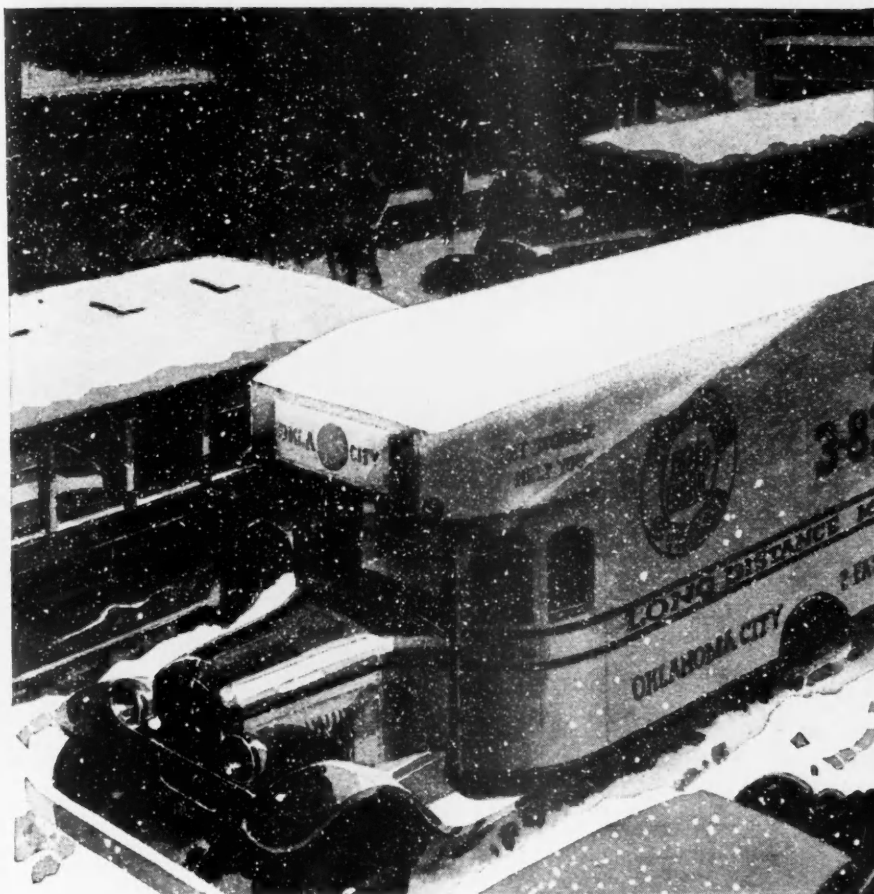
A copy of this new book will be sent promptly on receipt of your request.

INDIA TIRE & RUBBER CO.

AKRON, OHIO, U. S. A.

INDIA SUPER SERVICE TIRES

<<< "SINCE USING EVEREADY PRESTONE WE HAVE HAD NO RADIATOR TROUBLE AT ALL" >>>



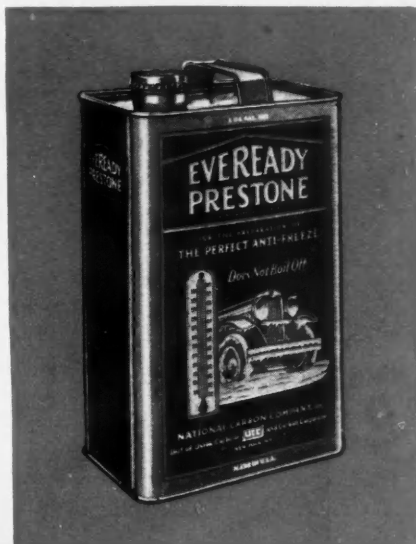
THE Red Ball, Inc., transfer and storage company of Oklahoma City, have a particularly difficult anti-freeze problem because of the fluctuation of temperature in the territory where their machines operate. Eveready Prestone relieved them of all protection difficulties. Here is what Mr. H. S. Brimm, the vice-president of The Red Ball, Inc., writes us:

"We have used Eveready Prestone in our trucks and cars for the past two seasons, and have found same very satisfactory. Due to climatic conditions in this particular territory, we have, in the past, had considerable trouble with our radiators; however, since using your product, we have had no trouble in this connection."

*The Commercial Car Journal
and Operation & Maintenance*

You will experience the same satisfaction with Eveready Prestone. Simply be sure that the bus or truck has a clean cooling system, free from leaks, add one supply of Eveready Prestone and the machine is safe as long as winter lasts. Neither warm nor cold weather driving affects Eveready Prestone. Its protection is permanent.

Eveready Prestone does not contain either alcohol or glycerine. It possesses *all* the properties pointed out by the National Bureau of Standards to be essential for an anti-freeze. Because of its lasting qualities and because less of it is required,



Prepare Your Fleet for Winter Operation

Don't send your machines through the hardships of a winter's use without the protection they deserve. See that there are proper cold-weather lubricants in crankcase, transmission and differential. Have ignition looked over so that there is a vigorous, hot spark. Fans, water-pumps, thermostats and winter fronts ought to be checked up. But the chief precaution . . . *most important of all* . . . have the cooling system serviced before anti-freeze is added. Radiator and water-jacket should be *clean*. All connections should be *tight*. See that all accumulated rust and scale are flushed out—thoroughly. Be sure there is not the slightest leak anywhere—then add water and one supply of Eveready Prestone and you can forget freezing worries no matter how long winter lasts.

The special safety cap on the Eveready Prestone can is protection against adulteration or substitution.

Eveready Prestone does not contain any alcohol or glycerine.

EVEREADY PRESTONE

(TRADE-MARK REG.)

FOR PREPARATION OF THE
PERFECT ANTI-FREEZE

one supply of Eveready Prestone becomes a very economical investment.

Eveready Prestone is in use everywhere that unfailing protection and complete safety are valued. Let us send you complete information and prices. Write for your free copy of "Eveready Prestone Dealers' Service Manual."

NATIONAL CARBON CO., INC.

General Offices

New York, N. Y.

Branches: Chicago, Kansas City,
New York, San Francisco

Unit of **UCC** *and Carbon Corporation*

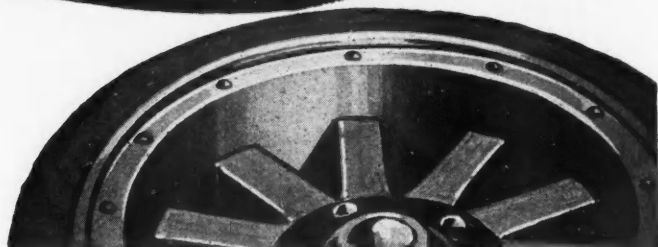
August, 1929



From SOLIDS to PNEUMATICS. Easily ...Quickly...with Dayton Steel Wheels

SPEED is bringing in more of the old cold cash to truck owners who have changed over their solid tire equipment to Dayton Single and Dual Pneumatic Steel Wheels.

With Daytons you get *safe speed—more loads—heavier loads*—and at the lowest possible cost per ton mile. Pneumatic tires will give you high speed, but you must have a cool running wheel to get money-saving tire mileage.



Tire destructive brake drum heat must be overcome. And the Dayton Dual combats and eliminates brake drum heat more successfully than any other wheel. This has been proved conclusively by long and exacting tests by truck manufacturers.

You can change over your present wheel equipment to Dayton Single and Dual Pneumatic Steel Wheels, easily and quickly, and get the same money-making and money-saving wheel performance enjoyed by the world's greatest truck makers who use and approve Dayton Steel Wheels.

Write for Change-Over Question Book

THE DAYTON STEEL FOUNDRY COMPANY
Dayton, Ohio

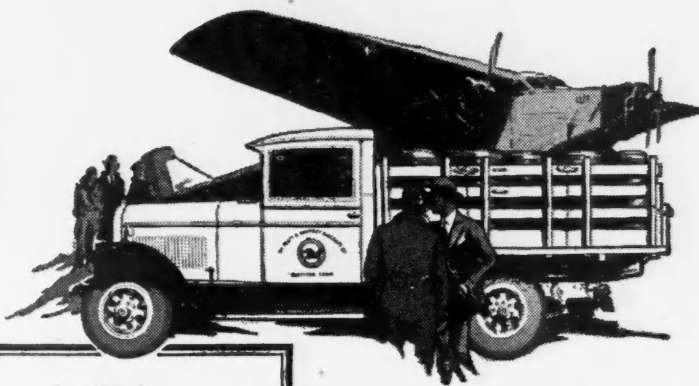
Dayton

The Mark of a Good Wheel

A Long-Life Record

Probably Unequaled in the History of Commercial Transportation

A Record Established By Reo Speed Wagons—Of Interest To Every Truck User. Read These Proved Facts!



1½ ton Reo Speed Wagon in service of Pratt & Whitney Aircraft Co., Hartford, Conn.

NOT long ago Reo proved by *facts* that no other American pleasure car was as long-lived as Reo.

Now—based on registration figures compiled by a totally disinterested statistical firm—(Reuben H. Donnelley Corporation)—Reo announces a record in long-lived commercial vehicles that we believe to be without parallel in the industry! See the figures at the right.

That's the record—in terms of years.

We don't know whether any other manufacturer, likewise figuring in terms of years, can equal that astounding record of longevity or not.

But whether he can or not, when we reduce longevity to *miles* instead of *years*—an even more accurate gauge of truck life than mere years—we are absolutely confident that no other truck built can match the record of the Reo Speed Wagon.

For Reo Speed Wagons, built to deliver passenger-car *speed*, cover more miles per hour, per day or *per year* than does the conventional, plodding type of motor truck; so that the probability is that a Reo Speed Wagon, five years old, has traveled twice as far as the average motor-truck of the same age.

Shrewd buyers of commercial transportation are not interested in the mileage record of 1 truck, 10 trucks, or even 100 trucks. But they are keenly interested in the *average* life, under *all* conditions, of *all* the trucks made by an individual manufacturer.

Check again the facts quoted above. Here is definite, concrete proof of the long life which has always been an outstanding feature of Reo Speed Wagons. *Proof*—based on the registration records of *all* Reo Speed Wagons in *all* lines of industry

Read These Proved Facts

—On July 1, 1928, there were 96,481 Reo Speed Wagons registered in the U. S.

—This was 4,756 more than had been sold in the U. S. during the entire 6½ years from Jan. 1, 1922 to July 1, 1928.

—93.2% of all the Reo Speed Wagons sold in the U. S. the previous 7½ years were still in registered use July 1, 1928.

—80.3% of all the Reo Speed Wagons sold in the U. S. the previous 8½ years were still in registered use on July 1, 1928.

—And 50.8% of all Reo trucks sold since 1913 were still registered on July 1, 1928.

There is just one reason for this almost unbelievable record of continuous service: Reo early recognized the need for tremendous stamina combined with balanced light weight in commercial vehicles—the need for sizing and powering trucks to do their job economically, efficiently and over a long mileage life. This stamina has been a recognized feature of Reo trucks since their inception.

Today Reo engineers, in their defeat of Friction and Vibration, have designed and built an even greater measure of efficiency, economy and long trouble-free life into Speed Wagons of ¼-ton to 3-ton capacity.

They have added features in design and manufacture that establish an entirely new conception of commercial transportation. Passenger car speed, flexibility and economy of operation have been blended with brute strength to offer industry ½-ton to 3-ton hauling like men have never known before. And above all, Reo engineers have made these qualities *lasting*.

Buying any truck without first investigating these Speed Wagons, is a mistake no thinking buyer will make.

Reo Speed Wagons are offered in 14 wheel-base sizes—from 115" to 179". Chassis priced from \$895 to \$2,200, F. O. B. Lansing. They incorporate such modern-day advantages as 4-forward speed transmission, 4-wheel, 2-shoe internal expanding hydraulic brakes, 6 cylinder engine, 7-bearing crankshaft, Myers Built-in chassis lubrication and other refinements.

Call your Reo dealer. One of the Reo Transportation Specialists who have studied and solved transportation problems for hundreds of truck owners will call and discuss your transportation needs, without obligation. Reo Motor Car Co., Lansing, Mich.



SPEED WAGON
World-Leader in High Speed,
Low Upkeep Commercial
Transportation

159

LARRABEE

— ADDS THE MODEL 30 T —

ANOTHER GREAT

SPEED SIX

Specifications

65 Horsepower Continental Engine
 Timken Bevel Axle
 4 speed, Brown-Lipe Transmission
 4 wheel Lockheed Hydraulic Brakes
 Tru Stop disc emergency brake
 32 x 6 Tires, dual rear — on Budd
 Disc Wheels
 12 foot loading space
 Chassis weight—4,550 pounds

*Custom Built Trucks
 at Production Prices*

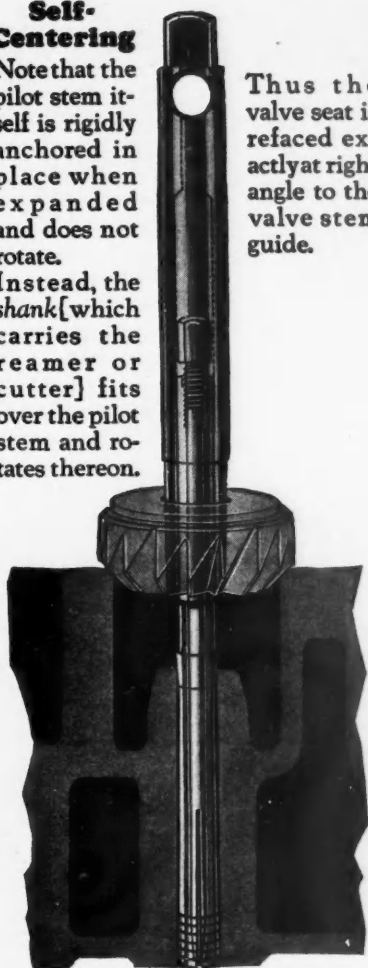
LARRABEE-DEYO MOTOR TRUCK COMPANY

Binghamton New York

Self-Centering

Note that the pilot stem itself is rigidly anchored in place when expanded and does not rotate.

Instead, the shank [which carries the reamer or cutter] fits over the pilot stem and rotates thereon.



Thus the valve seat is refaced exactly at right angle to the valve stem guide.

proper alignment between the valve seat and valve stem guide.

Range of expansion is .025, [25 thousandths of an inch] which will take care of all guide holes, no matter how badly worn. Made in following sizes— $\frac{5}{16}$ ", $\frac{11}{32}$ ", $\frac{3}{8}$ ", $\frac{13}{32}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{9}{16}$ " and $\frac{19}{32}$ ".



**STANDARD THE
WORLD OVER**

THE Sioux Expanding Pilot Stem assures accurate work over worn or uneven guide holes. Use it with Sioux Valve Seat Reamers and the Sioux Valve Seat Renewing Tool.

Simple, Speedy, Accurate,
Nothing complicated about it. Any mechanic can operate it and get the best results at once. This perfected Sioux Pilot Stem provides the sure, easy way to overcome engine troubles resulting from im-



No. 9 Sioux set of Expanding Pilot Stems—including $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " Expanding Pilots, 3 Shanks, 1 Knockout Pin and Wrench. Handles most automobile motors. Net complete . . . \$18.00

EXPANDING PILOT STEMS

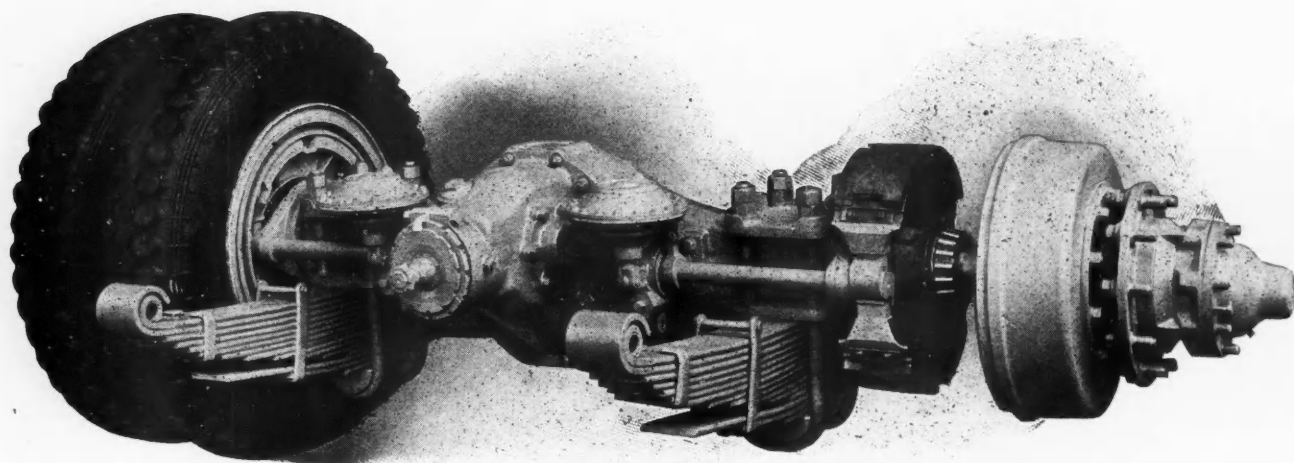
**Your Jobber
Sells Them**



Albertson & Co., Inc.
Sioux City, Ia., U. S. A.

WISCONSIN AXLES

for Motor Trucks *and* Motor Coaches



for More Power *and* Speed

Specify

WISCONSIN

FOR THESE REASONS

DURABILITY
LOW UP-KEEP COST
POWERFUL BRAKES

The inherent ability of Wisconsin Double Reduction Axles to deliver more power to the wheels and to withstand high road speeds makes them ideally adapted to present day transportation needs. Moreover Wisconsin Axles are easily engineered into all types of chassis, as they are available for various track and spring center requirements.

Wisconsin Axle Company Oshkosh, Wis.

Dr. JOSEPHUS GIBLETS

Recommends Budd- Michelin Duals in place of other wheels

DR. GIBLETS is professor of Monkeywrenchology at Jake's Garage and Dean of the Faculty in the College of Tough Breaks. It may be said without fear of successful contradiction that when it comes to common ailments like dandruff or wobbling duals—this veterinary knows his animals.

"A whole slew of truck owners has forgot what it feels like to make real dough. They are not exactly ill but they sure ache. Nasty little pains shoot through the old bank roll every time a tire blows out ahead of expectations and schedules. And going home and kicking the dog won't help things—at least it's not a permanent cure. For such cases I would prescribe Budd Duals."

Josephus Giblets

DR. JOSEPHUS GIBLETS has not only developed a swell bedside manner, but his contributions to the profit columns of truck owners have been monumental.

He's done some operating himself, gentlemen.

Why does this famous old practitioner recommend Budd Duals so all-fired stoutly? What's that? No!... No!... We never paid him a cent! Just read his own words...

"Some duals wobble and shimmy. This causes tires to sluff away like nobody's regular work. It also causes headaches, spots before the eyes, and crisp notices from banks.

"Budd Duals can't wobble, they can't shimmy. They can't wobble because the esophagus is in molecular equilibrium—which is the medical term for that double-

nut mounting which only Budd Duals have.

"Each section of a Budd Dual is held separately. First you put on the inner wheel—that's held as tight as a Scotchman's pocketbook by a set of inner cap-nuts. Then you smack the outer wheel right on over these—and that's held by the set of outer cap-nuts. Neither wheel can budge a gnat's whisker.

"Ordinary duals depend on just one set of nuts to hold both tires in place—and the germs of wobbling, shimmying, and general discontent breed right there, gentlemen.

"The deuce of it is you never know when you have a wobbling dual and even your best friends won't tell you—till you've scuffed out enough tires to pay for a set of Budd Duals."



DR. JOSEPHUS GIBLETS



Down the Hatch

FROM RADIATOR TO TAIL-LIGHT it is one continuous job of tire buying when you have wobbling duals. Use Budd Duals, avoid the wobble, and keep the bank roll well and healthy.

BUDD WHEEL  COMPANY
DETROIT

There's a
PROFIT!
for every one concerned

built into every
QUALITY BRAND
 Piston Ring

The Piston
 RING COMPANY
 Muskegon, Michigan





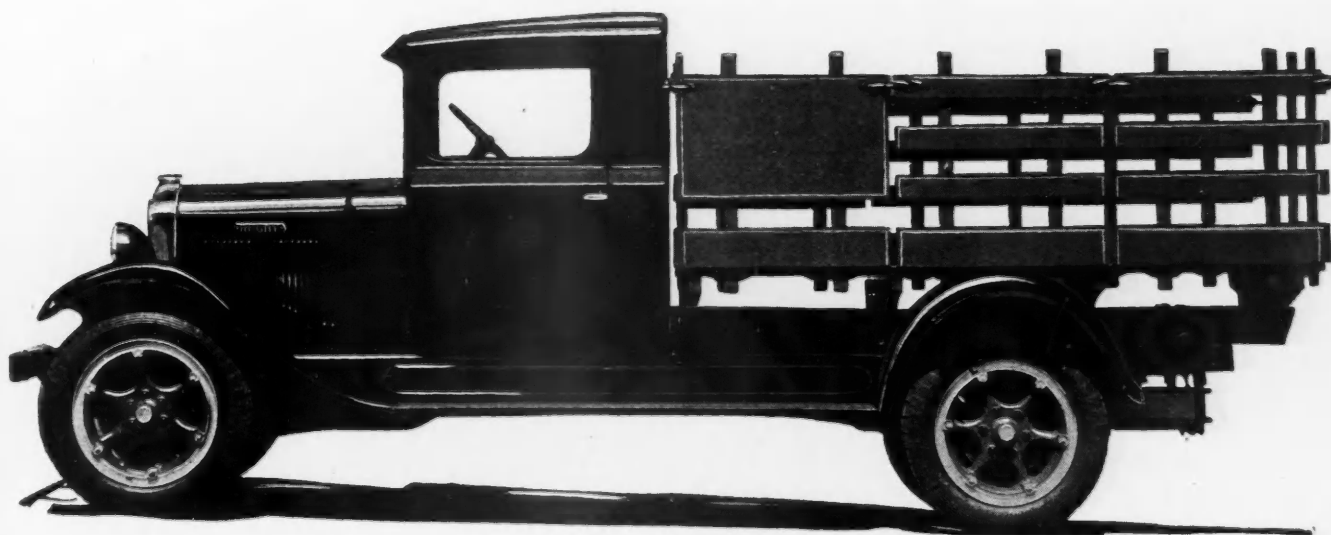
RUGBY

A GOOD TRUCK
BUILT BY DURANT

6 FORWARD SPEEDS

Ample power extra speed
. . . . with a very definite reduction in operating costs. These are vital advantages of the new Durant-built 1-ton Rugby—the first truck under \$800 with 6 Forward Speeds.

DURANT MOTORS, INC., DETROIT, U. S. A.
FACTORIES—LANSING, MICH., OAKLAND, CAL., LEASIDE, ONT.



New 1-Ton Rugby
Chassis, \$775, at Lansing, Mich.

NOW

TWO GREAT LINES OF TRUCKS AMERICAN-LAFRANCE AND REPUBLIC

*models that cover the entire
transportation field, meeting
every transportation need.*



*The fast, powerful
American-LaFrance
BIG CHIEF.*

From the fast, powerful Republic Fleetmaster, to the husky, big capacity American-LaFrance "Big Chief," this dual line of modern motor trucks covers the transportation field completely.

Powered by truck-type six-cylinder engines. Replete with advanced features in braking and transmission. Outstanding in strength with husky rear axles and bridge-like frames. Each with real truck value already widely recognized by truck operators.

Backed by a newly-merged, financially powerful institution which is rapidly taking its place as a leader in the truck industry.

Never before was a line of trucks quite so complete. Never before have truck distributors had such a genuine opportunity for profit as the LaFrance-Republic Sales Franchise offers.

Under a new, progressive program of expansion, the LaFrance-Republic Corporation desires to get into immediate touch with reliable automotive men — truck dealers, passenger car dealers, experienced service garage men — who are interested in a sales franchise that builds profits for the *dealer*. If you are such a man, write today for full information. It will be sent gladly.



*The new Republic
Model M-1, 20,000
lbs. straight rating
capacity.*

LAFRANCE-REPUBLIC CORPORATION



*Manufacturers of American-LaFrance Trucks
Linn Tractors • Republic Trucks. Factories: Alma,
Michigan • Morris, New York • Bloomfield, N. J.*

MODERN

DRIVE behind Guide Tilt Ray Head-lamps and you will learn quickly why so many motor vehicles are adopting them as standard equipment. You will know that night driving can be safe, comfortable, and enjoyable.

Providing two lights in one — a long range beam for the open road and a shorter tilted beam of equal intensity for passing and city driving — Guide Tilt Rays have earned the distinction of being called "The Modern Head-lamp."

Wherever you see a motor vehicle thus equipped, you can be sure its maker is providing safe and efficient transportation. You can be sure that such a vehicle can be driven at night with confidence.

GUIDE LAMP CORPORATION
CLEVELAND

Factories
ANDERSON, IND. and CLEVELAND



Guide
TILT RAY
HEAD LAMPS

Be Sure You Sell AMERICAN BRAKEBLOKS

Recently our attention was drawn to a number of cases of attempted substitution of BRAKEBLOKS. Operators reported unsatisfactory performance after re-surfacing their brakes with "BRAKEBLOKS." After examining the material we discover that competitors are offering as BRAKEBLOCKS, imitation articles which do not compare in performance to our product.

BRAKEBLOKS, the genuine article, are made only by American Brake Materials Corporation. Their design, construction and method of application are patented and the formula and method of manufacture of the BRAKEBLOK material belong solely to this company.

Genuine BRAKEBLOKS have these fundamental advantages:

They provide a Velvet Stop—Long Life in Service.

Low Maintenance Cost.

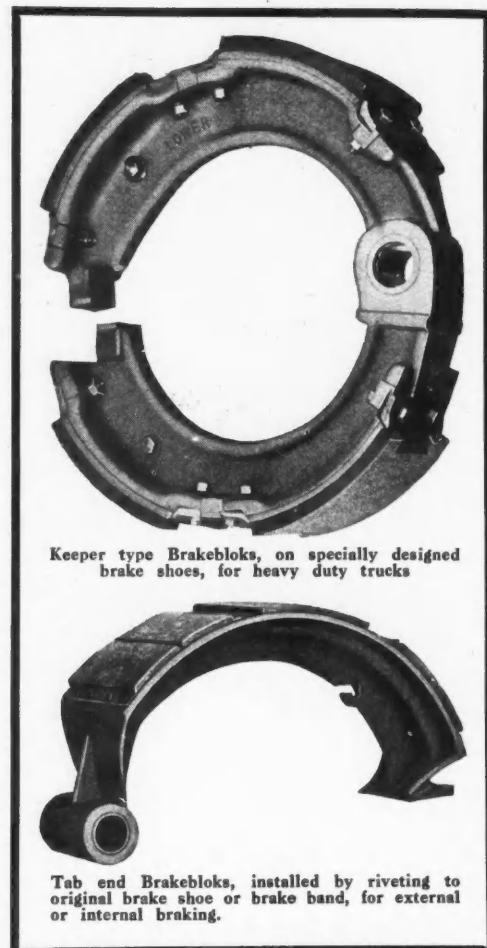
Do not score or gouge brake drums.

Recover quickly from the effects of water, oil, gasoline or grease.

Maintain a constant friction throughout their entire life.

Are non-deteriorating under any braking heat.

Made to fit any model bus or truck.



Keeper type Brakebloks, on specially designed brake shoes, for heavy duty trucks

Tab end Brakebloks, installed by riveting to original brake shoe or brake band, for external or internal braking.

—in big demand by fleet owners

Complete stocks are carried by all N. A. P. A. warehouses, assuring overnight delivery, or better, in all sections of the United States and Canada. Balanced stocks, no loss of sales, no obsolescence. Write us today for the name of nearest national distributor.

American Brake Materials Corporation, Detroit, Mich.

Automotive Division of American Brake Shoe and Foundry Co.

Sales Offices: New York, Chicago, San Francisco

30 Years
Braking
Service
to
Railways

**AMERICAN
BRAKEBLOKS**
TRADE MARK REG. U.S. PAT. OFFICE

Now
Serving
the
Automotive
Field

A NEW PLAN— NEW TRUCKS— and a Definite Dealer Opportunity

UTMOST VALUE Gramm Models

- 1½ ton
Model B—six-cylinder engine, 60 H. P., 3¼ x 4½ \$1,395.00
2 ton
Model C—six-cylinder engine, 85 H. P., 3¾ x 5.. \$1,795.00
2½ ton
Model D—six-cylinder engine, 85 H. P., 3¾ x 5.. \$1,995.00
3 ton
Model E—six-cylinder engine, 85 H. P., 3¾ x 5.. \$2,795.00
3 ton
Model EY—six-cylinder engine, 90 H.P., 4½ x 4¾ \$3,535.00

Full floating over capacity axles, Four Wheel Brakes, unusually deep-section, rigidly constructed channel frames as well as all modern appliances for dependable and safe transportation such as Two Stage Springs, Cam and Lever Steering Gears, Four Speed Transmission, Full Crown Mud Guards, Chromium Plated Fittings, Etc., Etc.

Complete detail literature for the asking. Write today.

Gramm furnishes experienced truck salesmen for your organization *without expense* to qualifying dealers.

A word from you will bring full explanation of the soundest, most profitable dealer proposition offered today.

Gramm Motors, Inc.

Builders of Fine Motor Trucks

Also the builders of the now famous Gramm Imperial Senior and Junior Van Chassis—the most outstanding, long distance performers on the road today.



THE OPPORTUNITY!

Gramm Motors, Inc.,
Toledo, Ohio

Gentlemen:

We are interested in your new direct factory plan. Kindly send us complete information.

Name

Address

City State



Protect Yourself

against Costly Winter Freeze-Ups



TRAFFIC TIE-UPS cause unavoidable delays. Denatured Alcohol will protect your trucks against freeze-ups when the motors stand idle. There's real economy in having this kind of insurance for your truck fleets. Get it—early enough and often enough!



ON TIME—Denatured Alcohol will keep your buses rolling on the most bitter cold days. Don't take a chance on losing the business you have so carefully built up. Use Denatured Alcohol early enough and often enough.

* * *

Get Your Supply

OF DENATURED ALCOHOL

This Month

EACH year the damage caused by failure to guard against winter freeze-ups amounts to a staggering sum. Repair bills mount, bus service is crippled, truck operators suffer from continual delays and breakdowns at critical times.

But there is one sure, safe way to protect yourself against the dangers of cold weather neglect. And it is such a simple and inexpensive precaution that no efficient bus or truck service can afford to be without it.

The simplest, the safest, the most economical anti-freeze to use is Denatured Alcohol. It is absolutely harmless to the cooling system and motor parts. It requires no special overhauling such as tightening of gaskets, hose or packings. You can use any quantity in accordance with

local weather conditions.

The instruction books for 1928 models show that every manufacturer of water-cooled cars approved Denatured Alcohol. More than 53% approved it exclusively. Radiator manufacturers, too, universally endorse it.

Weigh this evidence . . . consider these facts . . . then make plans to protect your costly equipment this winter with the safest, most economical anti-freeze. Don't wait. A few drums of Denatured Alcohol cost very little. Give the necessary instructions now. Write out your order today.

The Industrial Alcohol Institute, Inc.

GRAYBAR BUILDING, NEW YORK

DENATURED ALCOHOL — THE BEST ANTI-FREEZE

August, 1929

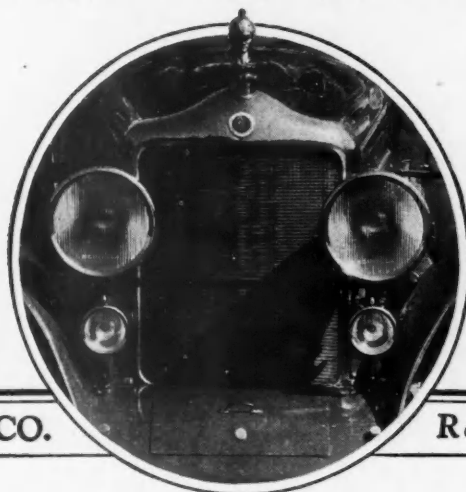
*The Commercial Car Journal
and Operation & Maintenance*



Modine

Turbotube RADIATORS

MODINE
TURBOTUBE
RADIATORS



1 to 1000 H.P.
— OR MORE.
ANY TYPE

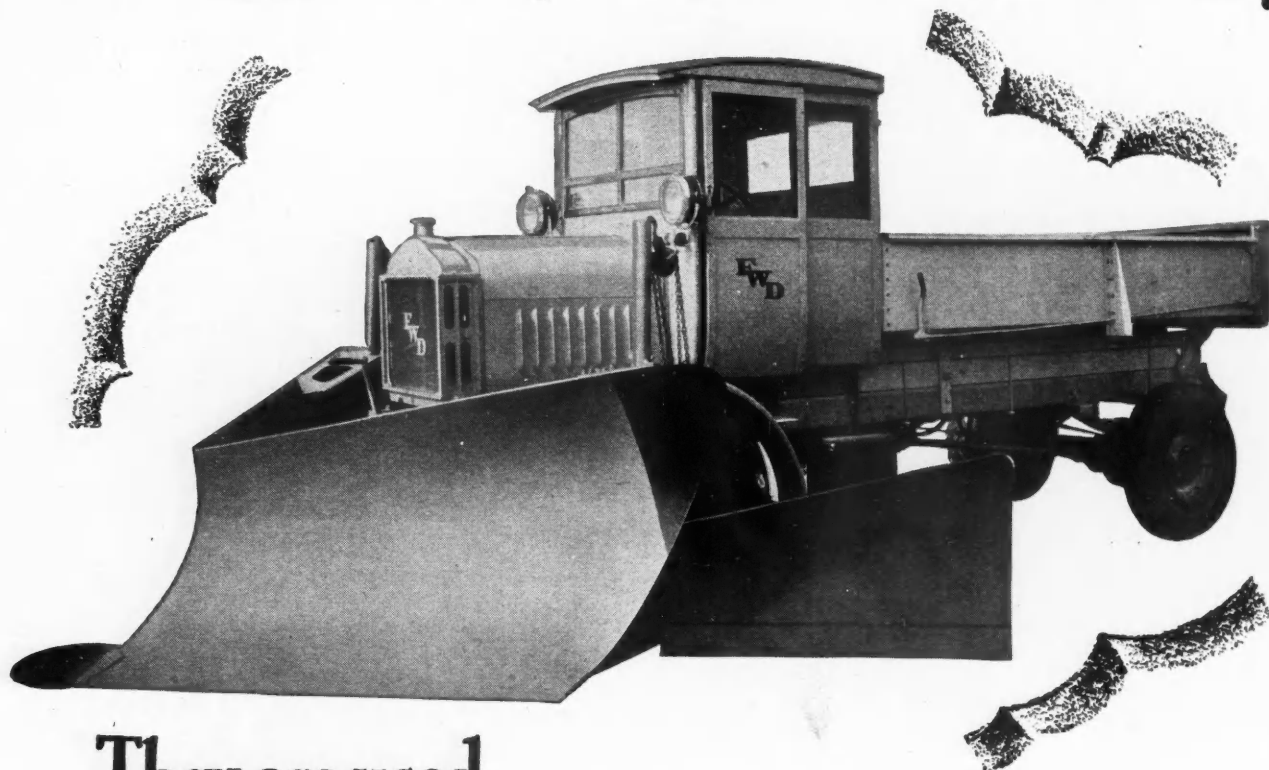
MODINE MFG. CO.

Racine, Wisconsin

Modine Representatives

F. SOMERS PETERSON, 57 California Street, San Francisco, Calif.
MODINE MFG. CO., 908 Smythe Building, Cleveland, O.

Sell **FWD** trucks for Snow Removal too!



They are used
for this work
 in 36 States

NOW is the time to prepare for your Fall Truck Sales . . . to line up the kind of truck business which is most easily obtained and most profitable to handle.

FWD dealers sell FWD Trucks for snow removal work in 36 States because they have established an enviable performance record in this field. They sell to state and county highway departments and municipalities because these departments know from experience that FWD's do the job right. They have the *power* and *traction* necessary for successful snow removal.

This is but one of the many fields served by FWD Trucks. The line gives all year—all purpose service . . . it opens up new sales avenues. Let us give you full particulars regarding our dealer proposition.

Write for it.

**THE FOUR WHEEL
 DRIVE AUTO CO.**
 Clintonville, Wisconsin

DEALERS

There are some territories still open where FWD dealers will be appointed. Perhaps you are in one of those districts. If you are, you can join up with this nation-wide sales and service organization. Get our attractive dealer plan—send for it today.

FWD

BACKED BY **NATION WIDE SERVICE**

DO "FILE TEETH" hold the Leash on Your Profits?

"FILE TEETH"—raised by wear on the surface of an ordinary steel brake drum—hold a tight leash on the profit you make from your fleet—demand a constant toll in lost service hours and high brake maintenance.

Ordinary steel heats, roughens into "file teeth". Linings shred quickly. Brakes require constant adjustment. That is why modern high-speed, sudden-stop traffic has disqualified ordinary steel drums for long severe service. They can't stand up.

Gunite Drums answer the demand for drums that will not develop "file teeth".



Scoring in ordinary drums produces "file teeth"

They are made of the new metal Gunite, a graphitic steel. Short, uniform flakes of graphite, evenly distributed in the ferrous matrix of Gunite keep Gunite Drums smooth as satin under heaviest wear.

Linings give three to five times longer wear on Gunite Drums—Gunite Drums themselves far outlast those made of ordinary steel. Get *all* the profit coming to you by changing to Gunite Drums on every bus or truck you own. Gunite

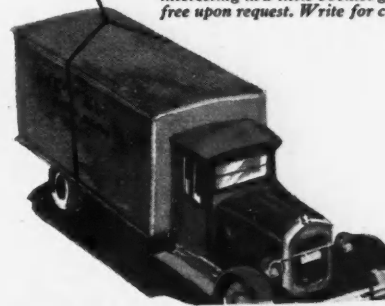
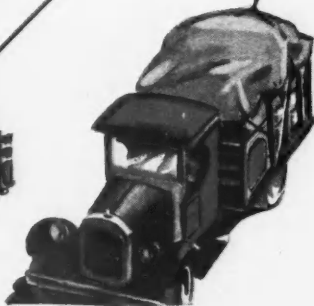
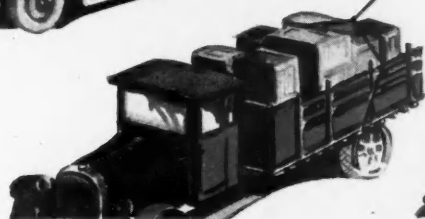
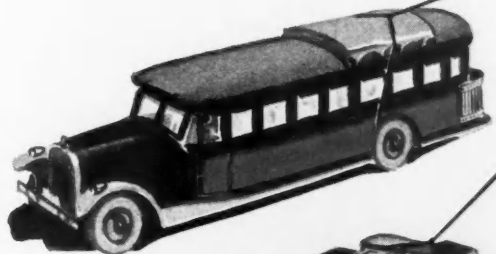
Drums can be secured through Jobbers for replacement . . . as standard equipment on new cars when specified.

THE GUNITE CORPORATION
Rockford, Illinois

GUNITE BRAKE DRUMS



Reg. U.S. Pat. Off.

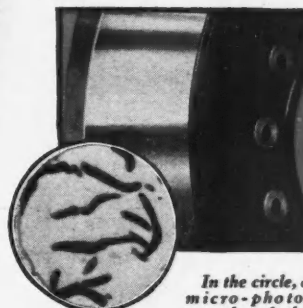


The Commercial Car Journal
and Operation & Maintenance

Longer Wear

for Drums and
Linings

The highly polished braking surface of a Gunite Drum after miles of service. Longer life for both drum and lining and brakes that are more positive, efficient and silent.

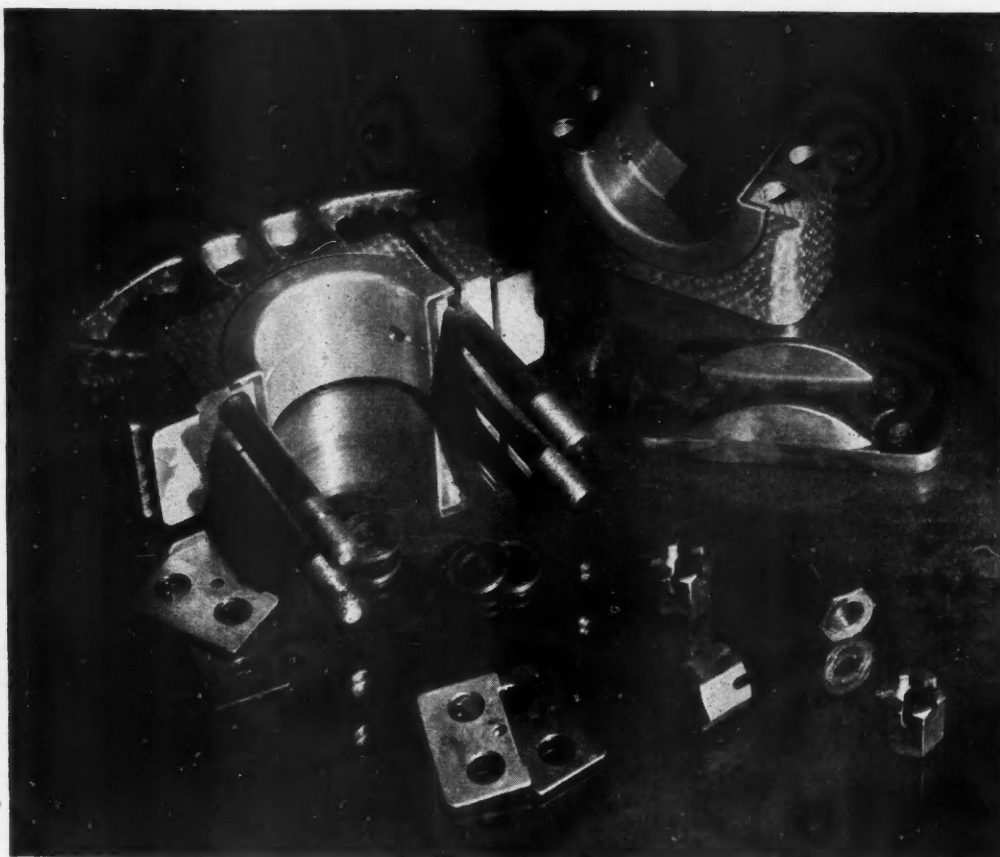


In the circle, a micro-photograph of the molecular structure of Gunite magnified 100 diameters, showing the even distribution of the uniform, fat flakes of graphite which give to Gunite its superior wearing qualities.

The ferrous matrix of Gunite is essentially the same as tool steel, being lamellar "Pearlite". Pure steel, however, has undesirable features under friction which the short, fat flakes of graphite, evenly distributed in Gunite, overcome. The "stickiness" is eliminated and drums of Gunite cannot score, tear or grab other materials. The complete story of this metallurgical development has been made easily understandable and very interesting in a little booklet gladly sent free upon request. Write for copy.

(8457)

August, 1929



The **WHY** of reinforced bearing caps



I-HEAD ENGINES
THEY TAKE BETTER
CARE OF THEMSELVES

An engine is no better than its parts. Waukesha Engines are famous for their remarkable stamina, only because the design of each part directly contributes to the extra rigidity of the whole engine structure.

In many models, Waukesha crankshaft bearings are fitted with steel backed bearing caps, held in place by four heat-treated, alloy steel, stud bolts. Extra deep, ribbed and trussed, they afford the shaft a solid support—and at the center, between the bearing studs, the reinforced steel backed cap prevents distortion. Positive shaft alignment is assured. Without this absolute bearing rigidity—wear, vibration and overheating would be excessive—result, a tremendous loss of power. That's the *why* of Waukesha bearing construction.

Write today for descriptive Bulletin No. 718. *Automotive Equipment Division, Waukesha Motor Company, Waukesha, Wisconsin. Offices: 8 West 40th St., New York; 7 Front St., San Francisco.*

960

▲ ▲ WAUKESHA ENGINES ▲ ▲

August, 1929

*The Commercial Car Journal
and Operation & Maintenance*



OWNERS ON THE GREAT WHITE ROLL CALL HAVE INVESTED OVER 171 MILLION DOLLARS IN WHITE TRUCKS AND BUSES IN FLEETS OF 10 OR MORE. ONLY A GREAT ORGANIZATION COULD MERIT SUCH A BIG SHARE OF THE TRANSPORTATION BUSINESS.

White builds with foresight for the greater needs of highway transportation

The development of highway transportation has brought with it many unusual and complex requirements. Operators are faced daily with problems of hauling that go far beyond the scope of standard truck models.

During the long history of White leadership, White has engineered, designed and built transportation units that meet the unusual requirements and solve the individual hauling problems of the country's biggest operators. White has pioneered every major development in the utilization of trucks and busses in highway transportation.

Long experience, vast resources and the most comprehensive engineering

knowledge enable White to build with foresight—to serve the intricate needs of transportation whatever they might be—to justify the capital investments in rolling equipment and to assure a profitable return on those investments.

The new White heavy duty truck and tractor Model 59 is a recent example of what White specialization means. It meets the demands for higher average speed, greater capacity and more power in the transportation of extremely heavy loads. The new White is designed by White engineers as a complete unit to transport peak loads at the sustained high speed demanded by modern highway traffic.

It is built to fit the individual needs of the operator who has an unusual hauling job. Being built entirely to specifications, the new model is available in a variety of wheel bases as a regular four-wheel chassis or a six-wheel tractor type with drive on all four rear wheels. It is especially suited for trailer operation and for relatively high-speed operation as a heavy duty truck. Four-wheel air brakes give positive control for the safe handling of heavy loads.

In every field of transportation White holds the greatest records of long life, dependability and earning capacity ever made by any truck or bus manufacturer.

THE WHITE COMPANY, CLEVELAND

WHITE

A COMPLETE LINE OF FOUR AND SIX CYLINDER

TRUCKS & BUSES

Chicago rides on Timken Worm Drive

Nearly all the big metropolitan motor-coach companies operate vehicles equipped with Timken Worm Drive Axles.

Take Chicago, for instance. The Chicago Motor Coach Company says—

"All our coaches except ten are equipped with worm drive rear axles.

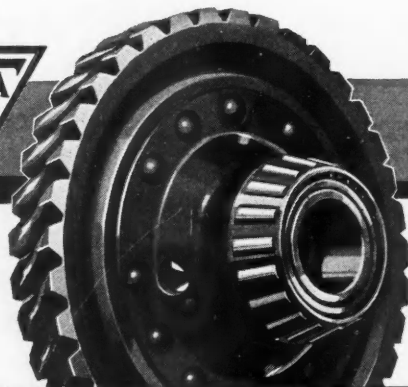
"We commenced operations in Chicago with Timken Worm driven coaches in 1923; and our fleet now consists of 488 coaches. During this period they have operated approximately 71,000,000 miles.

"In 1928 we operated 15,951,615 miles. Our worm-wheel consumption was 124, or an average of 128,642 miles per worm-wheel replacement.

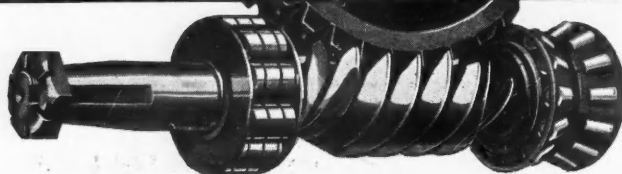
"Our average stops are about six per mile, or 95,709,690 stops and starts per year (1928)."

Timken Worm Drive Axles mean greater riding comfort because they are permanently silent, always reliable, and because they achieve the lowest possible center of gravity.

Most of the leading builders and operators of motor coaches recognize that Timken Worm Drive Axles help them get business, hold it, and handle it at minimum cost.



THE TIMKEN-DETROIT AXLE CO., DETROIT, MICH.



HAVE BEEN CONTINUOUS LEADERS IN THE FIELD SINCE THE
INCEPTION OF THE MOTOR TRUCK INDUSTRY

Standard MOTOR
Registered MADE IN
DETROIT
USA TRUCKS

"All the name implies"



THIS

Standard
MADE IN
DETROIT
USA

FISHER FAST FREIGHT—1½ TONNER
is equipped with Closed Cab and Plat-
form Body, 10 feet long and 6 feet 6
inches wide.

THE STANDARD—FISHER LINE OF MOTOR TRUCKS ALWAYS
INTERESTS GOOD DEALERS. THESE SUPERIOR MODELS ARE
NO MORE EXPENSIVE THAN ORDINARY MOTOR TRUCKS.



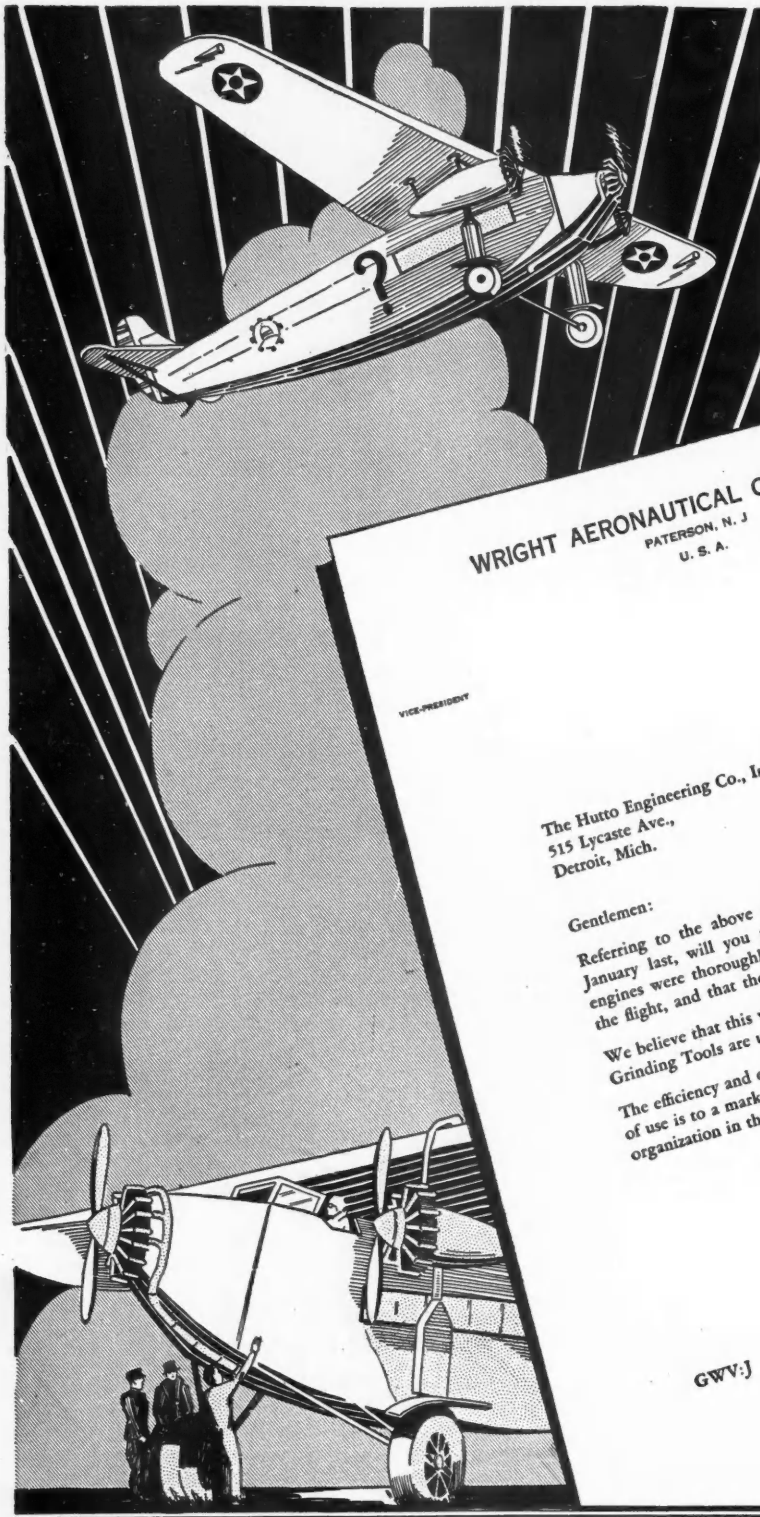
Standard
MADE IN
DETROIT
USA

MOTOR TRUCK COMPANY

ALBERT FISHER, President

DETROIT

MICHIGAN



THANKS Mr. Vaughan

WRIGHT AERONAUTICAL CORPORATION
PATERSON, N. J.
U. S. A.

May 3rd, 1929.

VICE-PRESIDENT
The Hutto Engineering Co., Inc.,
515 Lycaste Ave.,
Detroit, Mich.

Subject: Flight of U. S. Army
Plane "Question Mark"

Gentlemen:

Referring to the above non-stop flight of 150 hours 40 minutes during January last, will you please note that the three Wright "Whirlwind" engines were thoroughly examined by our engineers at the conclusion of the flight, and that the cylinders and bearings were in perfect condition.

We believe that this will be a matter of gratification to you, as your Hutto Grinding Tools are used in grinding "Whirlwind" cylinders.

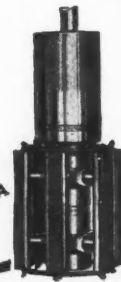
The efficiency and excellent condition of such cylinders after a long period of use is to a marked degree due to the thorough care and ability of your organization in the perfection of the Hutto Grinding Tools.

Very truly yours,

WRIGHT AERONAUTICAL CORPORATION,
G. W. Vaughan
Vice-President

GWV:]

USE THE A



Hutto
Model "AT"
Grinder for
automotive service \$35

NATURALLY we are proud that in setting a non-stop record of 150 hours the "Question Mark" used Wright "Whirlwind" engines—because all "Whirlwind" cylinders are Hutto ground. The record for dependable performance established by the "Question Mark" is a valuable testimonial for Hutto Cylinder Grinders. We appreciate your letter, Mr. Vaughan.

We maintain that nothing takes the place of actual accomplishments. Any automotive shop desiring to grind cylinders quickly, accurately, economically and with utmost ease will find it pays to use a Hutto.

Ask your Jobber Salesman—or write us how you, like 30,000 other Hutto users, can "Profit from the Daily Grind."

HUTTO ENGINEERING COMPANY, Inc.

538 Lycaste Avenue

DETROIT, MICHIGAN



IT'S THE NON-STOP MILEAGE



THAT MAKES THE BIG HIT

Your General Dealer Knows the right tire for your particular job

When you consult your General Tire dealer you benefit from the longest experience in truck tire specialization.

At his fingertips is the big fund of data compiled by General's engineering service. Always on the job, year in and year out, General's tire specialists have become noted and respected throughout the industry for their uncanny ability in solving every known type of tire operating problem.

The result is the most complete line on the market. A tire for *your* job and *every* job—designed and engineered to deliver the longest uninterrupted mileage—*non-stop* tire service.

The General dealer has information that will lessen your tire costs. Call him in on your requirements. The General Tire and Rubber Company, Akron, Ohio.

The Complete General Commercial Line Includes:

Dual-Grip Truck Cord; Truck and Bus Balloon; the "Jumbo" Ford and Chevrolet line; Heavy Express Special; One-Ton Express Special; Regular Cushion; Demountable Cushion; Heavy Duty Non-Skid Cushion; high speed and regular; Extra Heavy Non-Skid Cushion; Air Center Cushion, non-skid and rib tread; High Smooth Cushion.



General builds pneumatic and cushion tires especially engineered for

- Dump trucking
- Oil field and excavating
- City and inter-city busses
- Heavy short-haul trucking
- Cannon-ball long-distance freighting
- 1½ to 3-ton delivery service
- Light commercial express work (12 special types)
- Taxi service
- Farm, contracting and industrial tractors
- Trailers

The New
Dual-Grip Truck Cord

The GENERAL TIRE

GOES A LONG WAY



TO MAKE FRIENDS

“On whom can I depend for EXPERT ELECTRICAL SERVICE?”



The truck owner who settles this question once and for all time has relieved his mind and helped his business.

BUSY trucks see hard service, and there comes a time when the best electrical equipment grows tired; it needs attention or replacement.

What to do . . . allow heavy-handed attempts at “first aid” by the driver or alley mechanic, or have the job done right? Loss of time is loss of money, and, in the case of electrical repairs, the services of an expert are priceless in the time and money saved.


For those who are fortunate enough to own Delco-Remy equipped trucks, the matter of electrical repairs is very simple. Drive at once to the nearest Branch or Authorized Electrical Service Station of United Motors, the official service organization for the manufacturer of Delco-Remy starting, lighting and ignition systems.

There you will find expert workmen, special testing equipment, *genuine* Delco-Remy service parts. Also minimum time loss, minimum cost and *guaranteed* satisfaction.

Authorized Delco-Remy service is required less frequently than the other kind. All truck owners can have it, for Branches and Authorized Service Stations of United Motors are everywhere. All truck owners *should* have it, for it is far cheaper in the long run.

Why “shop around” for electrical service when you can go to an Authorized United Motors Service Station—one that you can *depend upon* for *expert* repair work? Write for a copy of the latest Service Directory; send your request to the United Motors Service Branch in any one of the following cities: Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Des Moines, Detroit, Indianapolis, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Oakland, Omaha, Philadelphia, Pittsburgh, Richmond, St. Louis, San Francisco, Seattle, Toronto.





LYNITE PISTONS

bring

FOUR EXTRA

profits



LYNITE strong aluminum alloy pistons cut down fuel consumption — that sets up *one* extra profit. They reduce wear on cylinders and bearings — that adds a *second* extra profit. They reduce gross weight and prolong the life of your trucks — there's a *third* extra profit. They give greater speed, more power and quicker acceleration — and that's the *fourth* extra profit. Be sure that your new trucks are equipped with LYNITE aluminum alloy pistons. Insist on genuine LYNITE for replacement.

ALUMINUM COMPANY OF AMERICA
PITTSBURGH, PA.

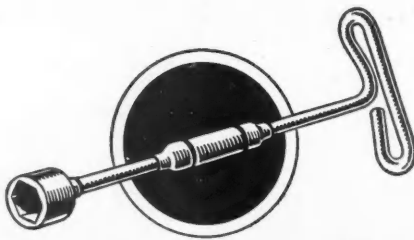
ALUMINUM · IN · EVERY · COMMERCIAL · FORM

Greater Speed—more pulling power. Quicker acceleration. Less wear on cylinders and bearings.

LYNITE
ALUMINUM ALLOY
PISTONS AND RODS

Vibration reduced to a minimum. Less weight—greater fuel economy. Cooler motor—with less carbon.

THIS IS THE AGE OF ALUMINUM



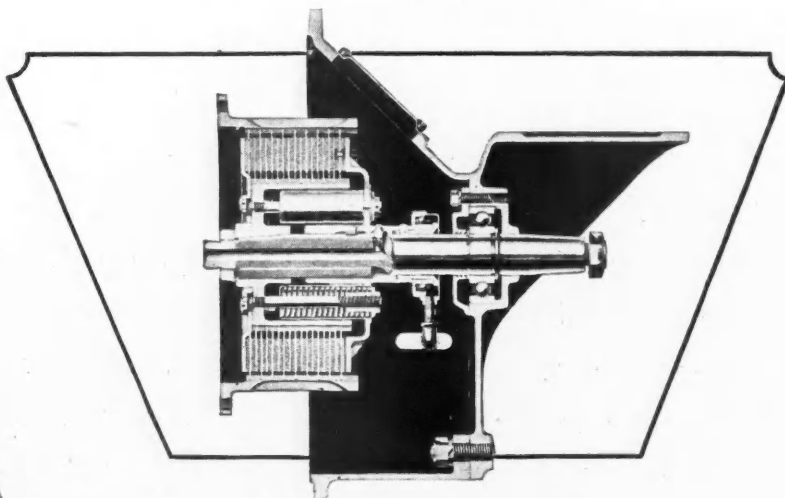
The *new-type* clutch for **FULLER TRANSMISSIONS** can be completely serviced and disassembled with an ordinary wrench

THIS is made possible by a *new-design tapered hub shaft* which does not require a press fit of internal driving hub . . . Forward-looking developments such as this, are more and more causing leading manufacturers of trucks, busses, and tractors to specify "Fuller" exclusively . . . Fuller engineers will gladly go anywhere for conference when either standard or special transmissions are being considered.

FULLER & SONS MANUFACTURING CO.

Division of Unit Corporation of America
KALAMAZOO, MICH.

Transmission Builders for 27 Years



Send for Transmis-
sion Engineering
Manual: "Low Cost
Transmission Ser-
vice". It's Free.
Write for your copy
today.



FULLER

STANDARD AND SPECIAL

TRANSMISSIONS

FROM ROUGH BILLET

TO FINISHED PRODUCT



BUDA PERFORMANCE

"Relay Truck hauling almost 100% overload"

"well satisfied cannot be equalled"

Illustration shows clearly the difficult conditions under which this fleet of Buda Powered Relay Trucks is giving better than ordinary performance.



THE BUDA COMPANY

HARVEY (Chicago Suburb) ILLINOIS

Members of Motor Truck



Industries, Inc., of America

PUTNEY BROTHERS
Excavating Contractors
Rockford Illinois

November 1, 1929.

Harrison-Shields,
Pittsburgh, Pa.

Gentlemen:

We have had wonderful success with our Relay trucks, and have four two-ton jobs and are hauling 3 yards and better all the time, and going where other trucks can not go. The trucks are standing up good under that kind of abuse. We can just compare them and other makes of trucks we use.

The other trucks we hire of 2½ and 3-ton capacity are hauling their normal load while our Relay trucks are hauling almost 100% over-load, and we are making 44 to 45 trips a day to their 25 to 29 trips a day. We tried the other trucks out on our own work by putting a 75% over-load on them and they could not go at all. Although we put 100% over-load on the Relays they made more trips than the other trucks did with their normal load. In muddy weather we have had to lay the other trucks off and use only our own trucks pulling their regular loads. The other trucks could not travel even while empty. We even had to pull these empty trucks with our loaded ones. We find that the cost of our work is lower with the Relay trucks because we were able to work in all kinds of weather.

In answer to your question in regard to general maintenance and gasoline and oil consumption, we find that the cost is lower than when using other trucks. We think that the general up-keep is less than with other trucks. We find that this is due to the fact that the Relays have a positive traction at all times. They do not require the racing of motors as much as other trucks. We are very well satisfied with them and know they can not be equalled by anything on the market.

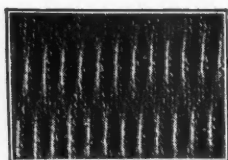
Yours very truly,
PUTNEY BROTHERS
EXCAVATING CONTRACTORS
1019 Arthur Avenue

(signed)
By A. E. Putney

mileage

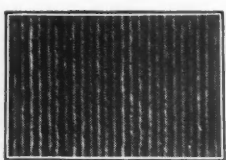
Free Rolling means Low-Cost Hauling

*How FISK Transportation Cords
add to the efficiency of your trucks
and increase your profits*



Ordinary Cord

Cross-section of ordinary cord, showing how the cross-threads in the fabric cause an uneven deposit of rubber, and produce extra chafing and overheating whenever the carcass is flexed.



Fisk All-Cord

Cross-section of Fisk All-Cord, showing how the tough cords, free from cross-strings, are completely surrounded by live rubber. This revolutionary process prevents friction and overheating — explains Fisk's proved ability to deliver excess mileage.



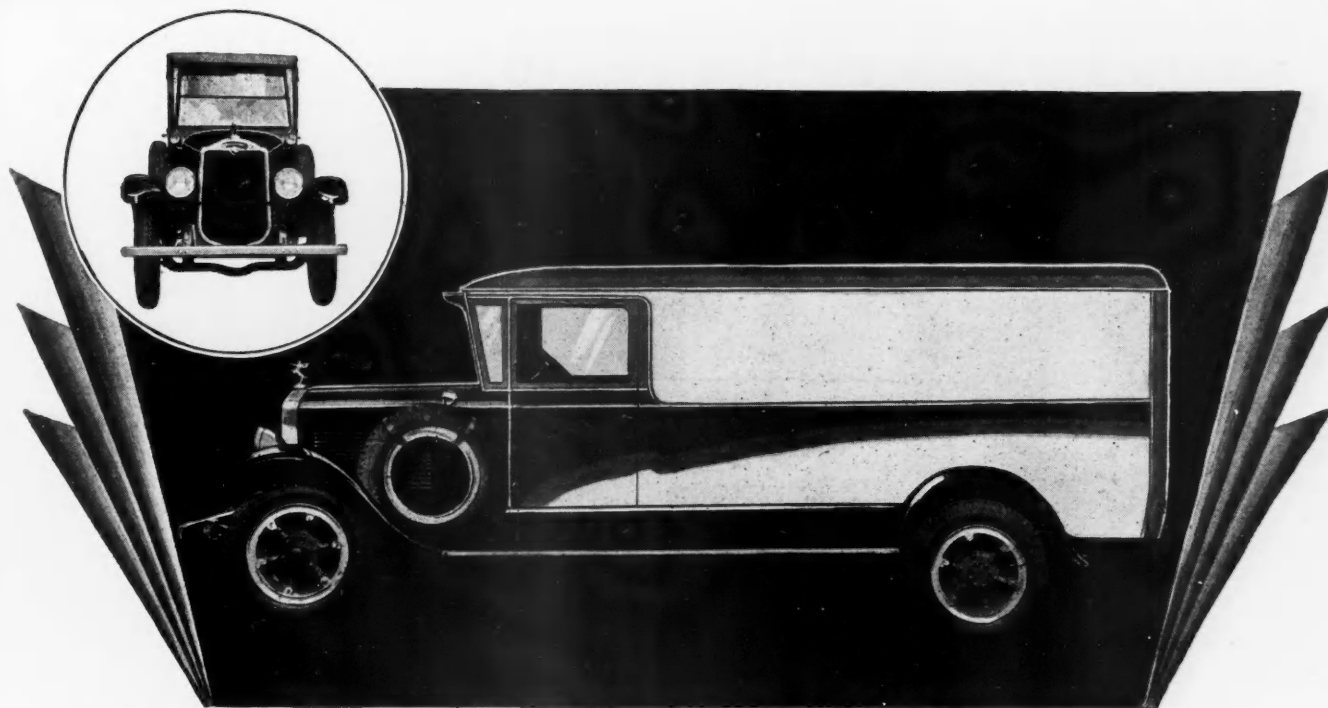
Time to Re-tire
Get a FISK
TRADE MARK REG.
U. S. PAT. OFF.

All-Cord construction, perfected by Fisk, keeps Fisk Tires free from internal friction. This better process does away with cross-strings in the tire carcass—prevents unnecessary chafing and wear every time the tire flexes.

As a result, Fisk Tires roll easier than tires built the ordinary way. They yield without resistance to every road condition, giving smooth riding and sure control over any kind of going.

And because Fisk's All-Cord process prevents overheating, these sturdy tires deliver the kind of mileage that helps you pile up profits. If you want your trucks to operate steadily at the lowest cost per mile, equip your fleet with Fisk All-Cords.

FISK



Now - a newer, even nimbler member of the mighty GOTFREDSON line!

Famed everywhere as the CHAMPION of CHAMPIONS in all feats that demand the strength of Bull Elephants, the Power of Locomotives and the gameness of Pit-Terriers, the GOTFREDSON line now steps forth to introduce a NEW member of its family, the *one and a half ton "flash"* . . . the slim and speedy fellow, designed and built to slither nimbly through heaviest traffic . . . geared to lay back its ears in fastest highway company and show its heels. So . . . add to your knowledge that the GOTFREDSON line contains the biggest, brawniest Bulls of the motor-truck herd, the additional fact that it likewise, in model RB36, presents the NEW and agile member of the clan, the most lightfooted, swift and nimble traffic-dodger that ever pushed its nose ahead of even the passenger cars.

DEALERS: Note some of the specifications of this GOTFREDSON "flier":

1½ ton, Six-cylinder 61 H.P.; 7 main-bearing crankshaft; 4 speeds forward; combines speed, power and gameness "to the core;" steering wheel adjustable up or down; 4-wheel Lockheed Hydraulic brakes; wheelbase established to suit body design and load . . . AND SPEED? . . . F-I-F-T-Y miles per hour . . . for any and all hours!

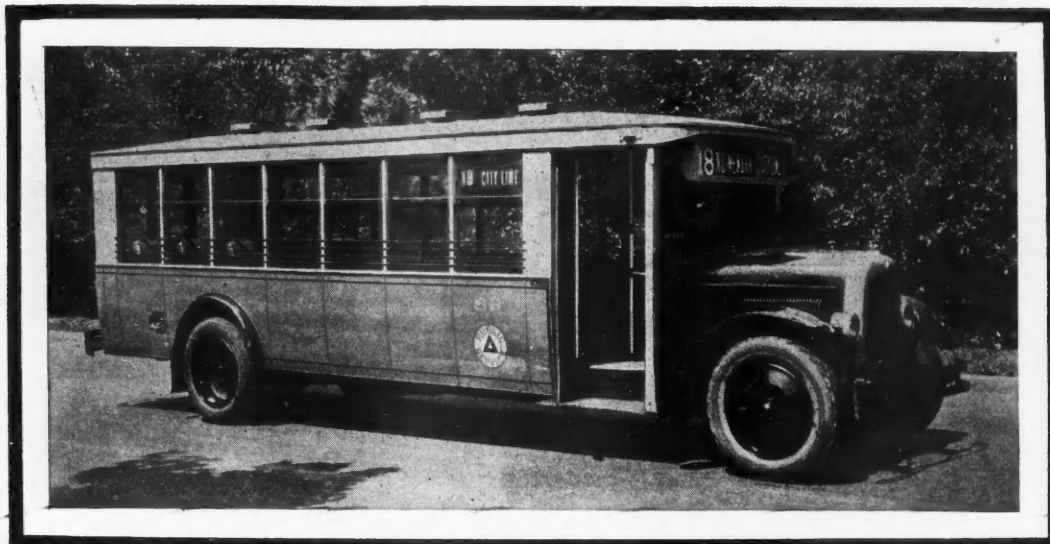
For more details of the GOTFREDSON line . . . including *all* of the family, from giant ten-tonner to the "flash" of the line, address:

Gotfredson TRUCKS

THE ROBERT GOTFREDSON
TRUCK COMPANY
3601 Gratiot Ave. -:- Detroit, Mich.



THE ROBERT GOTFREDSON TRUCK COMPANY
3601 Gratiot Avenue, Detroit, Michigan
Send me information relative to GOTFREDSON
Selling Franchise in this territory.
Name _____
Address _____
City _____
State _____



Making a Good Bus Better

BUS manufacturers today are building into their vehicles such structural elements as will assure comfort and convenience for the passenger and economy of operation for the owner.

Comfortable seats, attractive appearance, friendly atmosphere, safe and reliable service—these are advantages that appeal to the bus patron . . . Small operating expense, low upkeep cost, easy maintenance, profits—these are factors that the operator seeks.

Good buses can be made better, and are being made better, by the Westinghouse Automotive Brake.

Better for the patron because short, smooth stops without driver fatigue assure greater safety and permit faster schedules. Better for the operator because of greater security, increased passenger mileage, quicker movement in traffic, lower brake maintenance.

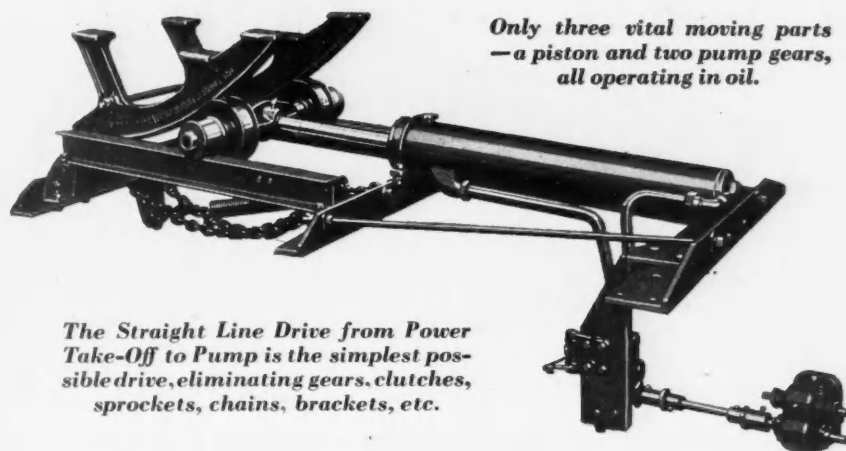
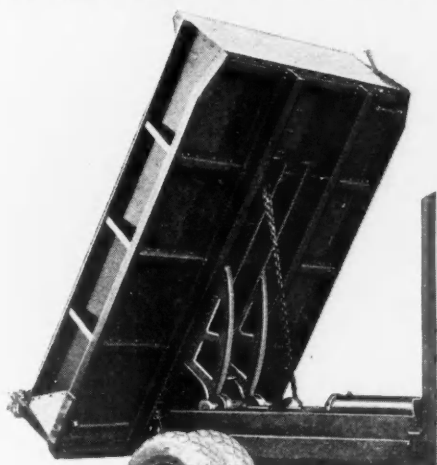
WESTINGHOUSE AIR BRAKE CO.

Automotive Brake Division

Wilmerding, Pa.



(6257)



*Only three vital moving parts
—a piston and two pump gears,
all operating in oil.*

*The Straight Line Drive from Power
Take-Off to Pump is the simplest pos-
sible drive, eliminating gears, clutches,
sprockets, chains, brackets, etc.*

WHY WOOD HOISTS?

Because 18 years of practical experience in building hoists for dump truck men has taught us how to build hoists to meet modern operating conditions. Simplicity of design, sturdy construction, speed in raising, high dumping angles, power to spare and low upkeep are outstanding features of Wood Hoists that are appreciated by truck manufacturers and dealers and dump truck users, too.

WHY WOOD DUMP BODIES?

Because they are built for severe service, by special machinery and specially trained men, Wood Dump Bodies carry *pay* loads all the time.

They are reinforced at all points where greatest stress comes and vital parts are of drop-forged steel—assuring solid satisfaction in performance and economy in operation.

Get all the facts. Write for catalog No. 10

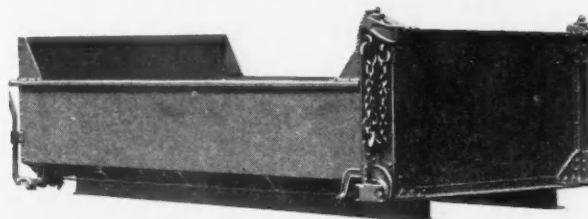
WOOD HYDRAULIC HOIST & BODY COMPANY

DETROIT

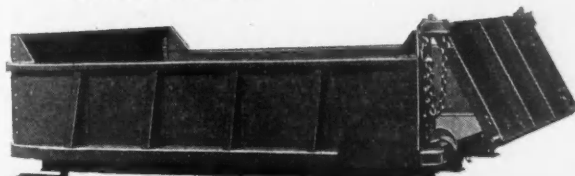
Branches and Dealers in Principal Cities

MICHIGAN

*Below: W-12 a heavy duty
body for excavating work
and severe service.*



*Below: H-1 Body has remov-
able sides. Quickly convert-
ible into platform body for
general purposes—practically
two bodies in one.*



*Above:
W-8 Body,
Rugged,
for
General
Dumping
Service*



**Nothing *Finer*
Can Be Said of Any
Motor Vehicle Than,
It is -**



LYCOMING MOTORS

LYCOMING MANUFACTURING CO.
WILLIAMSPORT, PENNSYLVANIA

Lycoming's Vast Resources, Experience and Skill Are Dedicated to Leadership in Fine Motor Building
August, 1929

*The Commercial Car Journal
and Operation & Maintenance*

HOT and then HOTTER

*How much delay
and how many dollars
is the heat Costing You?*

Leece-Neville equipment
pays for itself **FAST**
these days

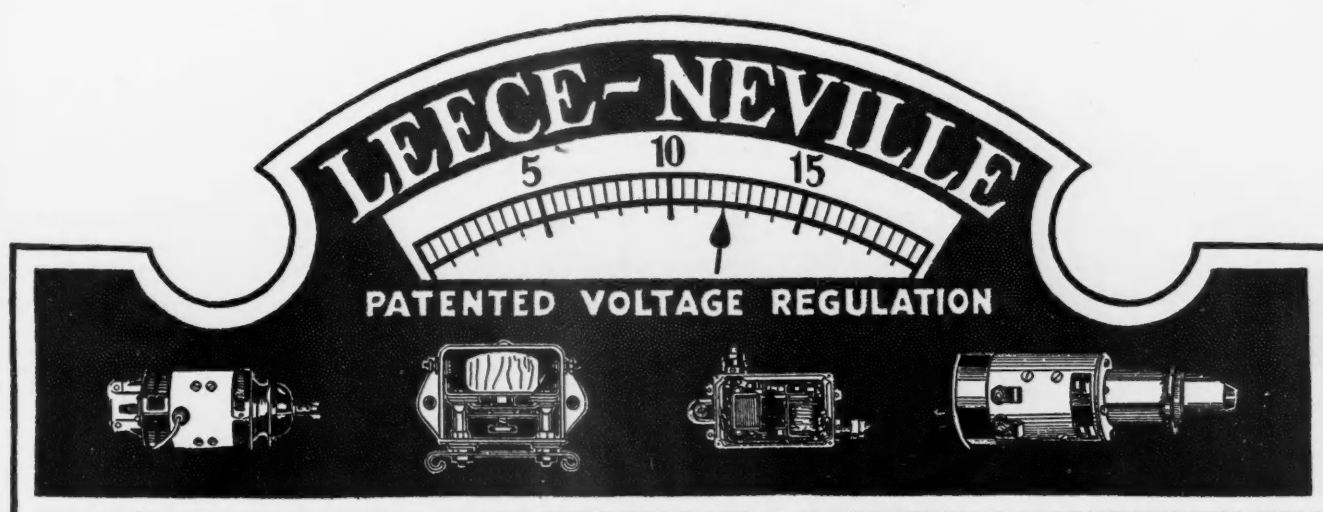
**Voltage Regulation
Minimizes
Electric Maintenance**

1. Battery cannot be over-charged.
2. The battery is charged only at the correct rate for its state of charge.
3. Battery will operate longer without requiring replenishing of electrolyte.
4. Life of battery greatly prolonged.
5. Lights can be operated direct from generator.
6. Loose connections will not cause lamp bulbs to burn out.
7. Makes most economical generator system.
8. Any Leece-Neville Voltage Regulated Generator can be used without battery.
9. Lamp life greatly prolonged.
10. Motor coaches fitted with Leece-Neville voltage regulated generators provide passengers with satisfactory illumination and safe transportation.

Even if your business pays you 10% NET profit—and most businesses pay considerably less—you have to haul \$180.00 worth of pay load to break even when you replace an \$18.00 Storage Battery.

In addition to eliminating replacement expense, Leece-Neville Voltage Regulated equipment protects you against costly delays. Either way, it pays for itself, and then it pays you. Put it on your present equipment and specify it on all future purchases. Full information on request.

LEECE-NEVILLE CO.
Cleveland Ohio



And Now

They go out in fleets. Contractors, state and county Highway Commissions, quick to appreciate time-saving—cost-cutting dumping equipment are rapidly adopting



Part of a Fleet of "Commercial" 7 yard 3-Way dumping Bodies ready for shipment.

Whether for road building, excavating, coal stripping, quarry work or other uses where dumping trucks or tractors are used, the "Commercial" 3-Way has no rival.

Discharging the load to either side or rear, whether moving or standing, thus obviating the necessity of maneuvering for position, makes a strong appeal to both truck owner and operator in the tremendous saving of time and unnecessary wear and strain of truck chassis.

Operating control is done by the movement of a lever conveniently located in the driver's cab.

Bodies of 8-10 or 12 gauge steel as required are electrically welded and riveted. Side Gates *down-fold* automatically when the body begins its upward movement effecting a quick discharge of the load and—without stopping.

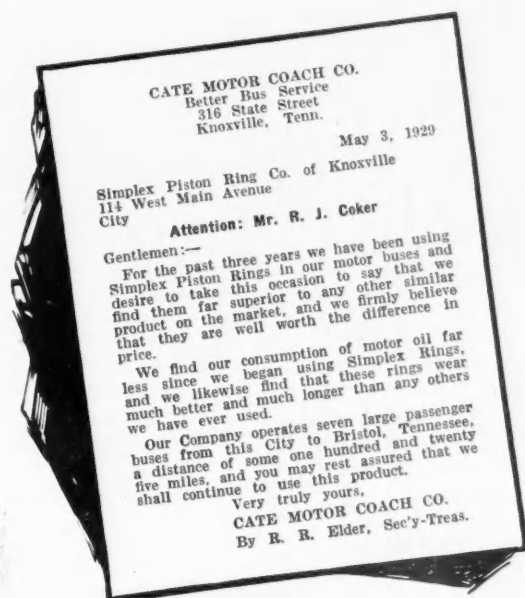
Write for Catalogue

MANUFACTURED BY

THE COMMERCIAL SHEARING & STAMPING COMPANY
YOUNGSTOWN, OHIO



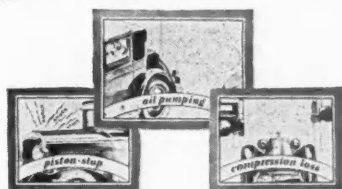
Simplex Piston Rings Save OilFleet Owners Say So!



Another fleet owner reports huge savings in maintenance costs with Simplex Piston Rings.

Savings on oil consumption ranging from 25% to 85% are common among users of Simplex Rings. No other ring can approach the performance of Simplex in curing oil pumping, compression loss and piston slap, because no other ring expands up and down in the ring groove—a patented feature of the Simplex Ring.

Since profitable operation of your fleet is so vitally dependent upon economy in maintenance, you ought to know the complete Simplex story. An illustrated booklet of vital interest to fleet operators will be sent free on request.



SIMPLEX CURES THE 3 BAD HABITS

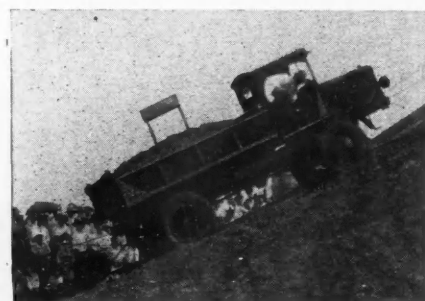
The Simplex Piston Ring Co. of America, Inc., 1926 East 66th St., Cleveland, Ohio



Coleman leaving 47% section of grade and starting up 70% section



Coleman climbing 70% section of grade. Note U. S. Army sign-board reading: "35%-70% Grade, Course No. 1"



Coleman held by foot brakes in middle of 70% section after backing from top. Truck was started from this point without any slippage and again climbed to top of 70% section

Again we say:—

LOADED!

During recent U. S. Army tests at Camp Holabird, the Coleman Truck strikingly proved the difference between ability to carry PAY LOAD and mere ability to carry a carefully placed weight.

A standard 3-ton Coleman Model D-40 dump truck fitted with an F-4 Wood Hoist and a W-12 Wood 3-yard body was loaded with 8315 lbs. of building sand. This *over-load* was taken to the top of a *seventy per cent* test hill. The truck then *backed* down and stopped in the middle of the hill and held with the brakes without slipping a wheel. It was started again from this position and continued on up and over the hill. The sand load was then dumped in front of the reviewing stand and the certified weighing ticket handed to the Army authorities. To quote one of the Army officers, this was "hard-boiled performance" and not "eye-wash." ("Eye-wash" is army slang for something that looks pretty but doesn't mean much.)

NO COMPETITION

During the tests, Coleman was the *only* truck which demonstrated its ability to carry an **EVERY-DAY LOAD** over the 70% hill. Many vehicles did go over, but with *highly-concentrated*, carefully-placed loads. One 3-ton truck carried as high as 7500 lbs. *on the chassis*. (Coleman 3-ton carried 8315 lbs. with body and hoist.)

GET SPECIFICATIONS

With the every-day pay load Coleman has better traction than other trucks with **PLACED** demonstration loads. It has a low speed of 150 to 1—and is *governored* to do 30 M.P.H. on hard roads. Can be steered with one hand in hub-deep, soft mud. Get the full story and learn about an all-weather, all-going, profit-building truck that's a **TRUCK**.

Made in all sizes . . . write for specifications . . .
Attractive Dealer Franchises Available

COLEMAN MOTORS CORPORATION

Main Plant
Littleton, Colorado

Branch
Chicago, Illinois

Eastern Plant
Washington, D. C.

COLEMAN

**FOUR
WHEEL
DRIVE**



Coleman after climbing 70% section of grade, ready to go down opposite side

The correct tire *for* every type of hauling



LOWER hauling costs, highway laws, and traffic regulations now demand the advantages of pneumatic equipment on all motor vehicles.

Miller was one of the first to sense this trend and has developed types and sizes that meet your requirements exactly.

You will have fewer tie-ups and delays when you use Miller Tires and Miller Service.

THE NEW MILLER

Truck and Bus Balloon

Especially designed for truck and bus service—combining sure traction and slow tread wear. A tire that is making amazing records for economy in hauling.

MILLER HEAVY DUTY

4½ in. and 5 in. Heavy Duty Tire, a strong, rugged tire made in seven sizes to serve the millions of light trucks which use either a 4½ in. or a 5 in. heavy duty tire. A profit maker on hauling.

MILLER HIGH PRESSURE

6 in. and Up, Pneumatic-High Pressure

For trucks and busses using the high pressure type of tire. Built to stand punishment and keep going. The outstanding tire in its field.

THE MILLER RUBBER COMPANY

of N. Y.
AKRON, OHIO

Send coupon for valuable book

Every truck or bus operator should have the valuable tire data contained in this new book by Miller. It tells you how to determine loads—select the right tire—and make tires pay. Send coupon today for your free copy.



THE MILLER RUBBER COMPANY of N. Y.
Commercial Sales Dept., Akron, Ohio.

Please send me your new data book on Pneumatic Truck and Bus Tires.

Name

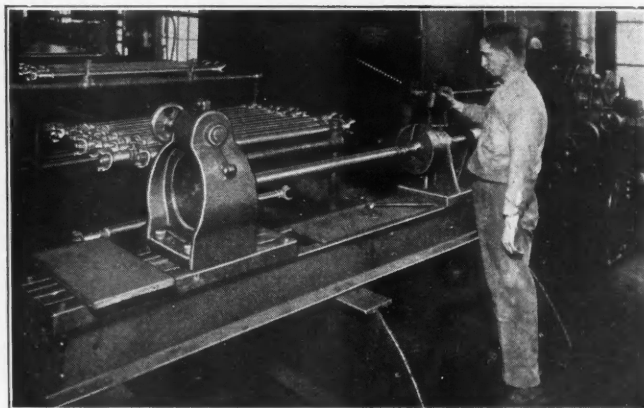
Street

City

SILVER ANNIVERSARY YEAR

1904

1929



Making The Grade ~ ~ ~

After the assembly of a Spicer Propeller Shaft is completed, each shaft is subject to a torque test that is almost double the ordinary strain received in actual use.

Such safeguards account for the unparalleled performance of Spicer Propeller Shafts — under all conditions.

SPICER MANUFACTURING CORP.
Toledo, Ohio



Spicer
Propeller Shafts

Where Dependability Counts—



27 Sterlings On This Job!

A GAIN Sterling dependability looms as a big factor in speeding up construction work.

27 Sterlings were used in excavating the new Brighton High School at Boston. The steep, irregular hillside coupled with bad weather conditions, made progress unusually difficult. Yet these husky Sterlings kept plugging along. 65,000 cubic yards of material were hauled—50%

of which was rock. And the job was completed *one month ahead of schedule*.

Just another instance of a good truck doing an excellent job. For 22 years Sterling has led the field in performance and long life. No wonder dealers find the Sterling line unusually profitable.

Descriptive literature covering the complete line of Sterling Models is available—write for it.

STERLING MOTOR TRUCK CO., Milwaukee, Wis.

41st Ave. and Rogers St.

DEALERS IN
PRINCIPAL
CITIES

Sterling

Sixes

30 FACTORY
OWNED
BRANCHES

Factory Branches: Boston, Providence, Worcester, Springfield, New York, Newark, Philadelphia, Trenton, Baltimore, Reading, Camden, Pittsburgh, Erie, Akron, Youngstown, St. Louis, San Diego, San Francisco, Oakland, Sacramento, Fresno, Stockton, San Jose, Los Angeles, Chicago, Minneapolis, Bakersfield, San Bernardino, Seattle, Portland



This picture shows a Model 6-28-D Linn Tractor together with a Linn-Wheeler Crawler Trailer. The tractor is equipped with a five yard body and the trailer is equipped with a seven yard body. Both of these bodies will operate in three directions; that is to either side and also to the rear.

The tractor is equipped with Brown-Lipe Single Plate Clutch Control Set, Model 70—4 speed transmission, Model 70—1 speed transmission and two Special Power Take-offs manufactured by Brown-Lipe for the Commercial Shearing & Stamping Company of Youngstown, Ohio.

Here's a Job that Required the Best Clutch and Transmission Money Could Buy! BROWN-LIPE EQUIPPED!

WHEN a manufacturer is selecting the component parts for a vehicle that must haul loads of over 18 tons—he naturally pays particular attention to the clutch and transmission. The importance of these two units to the satisfactory operation of the vehicle eliminates all but the best from consideration.

The Linn Tractor and Trailer illustrated above is one example of the extremely severe duties that this husky machine is called on to perform every day. Brown-Lipe Equipment is standing up under these duties and doing its share to maintain the reputation of the Linn Tractor as well as many other heavy duty vehicles.



BROWN-LIPE GEAR COMPANY
Syracuse, N. Y.

Detroit
New York

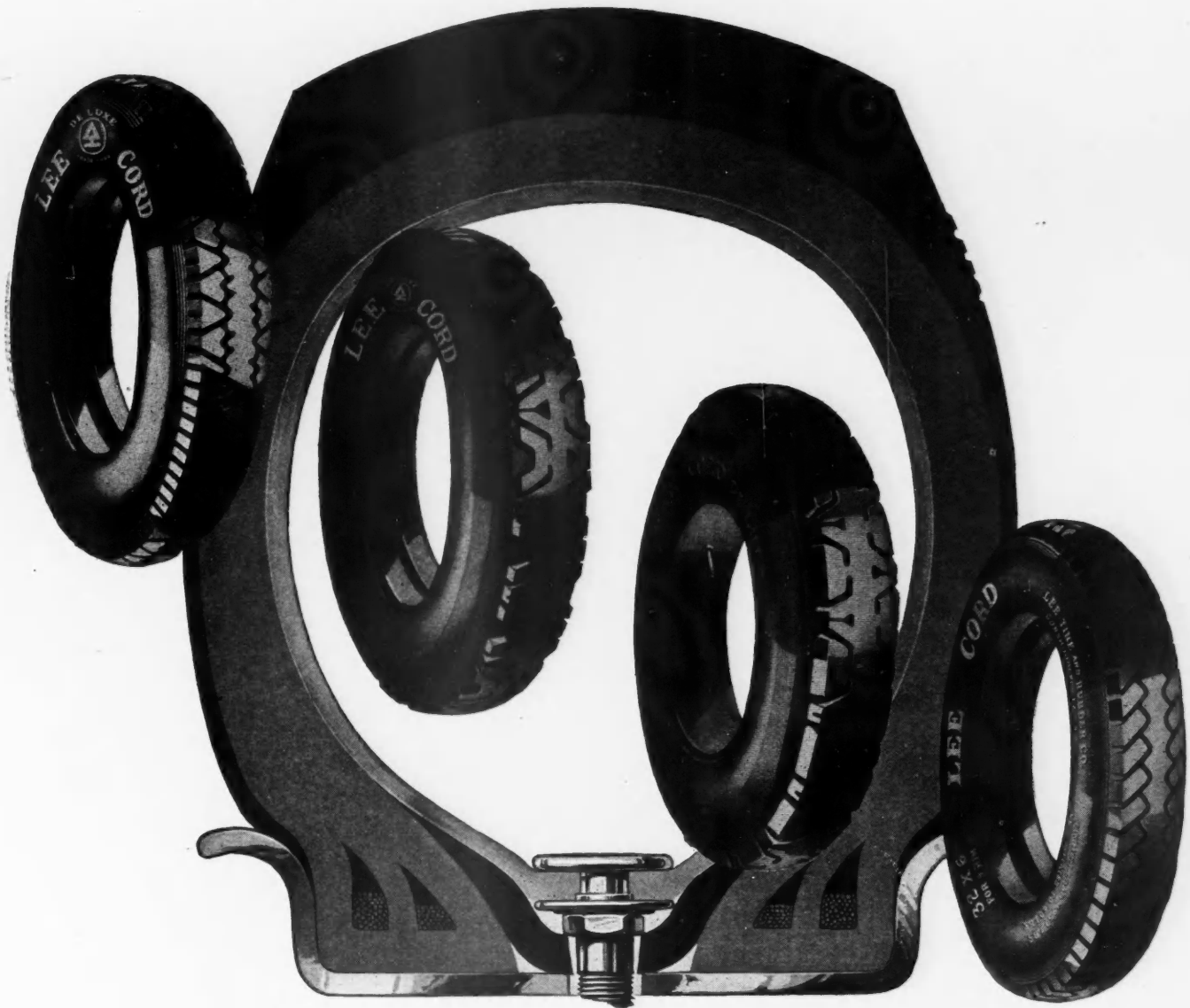
San Francisco
London, Eng.

BROWN-LIPE GEAR

August, 1929

The Commercial Car Journal
and Operation & Maintenance

LEE Twin Bead, Heavy Duty Pneumatics



THE performance of this LEE Cord round tread, high speed bus and truck Pneumatic has set a new standard for high speed trucks and busses. On summer heated or snow or ice covered roads this twin bead marvel will exceed expectations. A unique twin bead feature is incorporated in this tire. Cord fabric of the highest grade, long staple cotton is used exclusively.

Made in the following sizes:

10 Ply 32 x 6	14 Ply 36 x 8
10 Ply 36 x 6	14 Ply 40 x 8
12 Ply 34 x 7	14 Ply 38 x 9
12 Ply 38 x 7	14 Ply 42 x 9

THIS LEE twin bead tire is like its twin brother to the right, but is made in the smaller truck sizes. Its performance is equally as dependable as that of its big brother.

For Ford Trucks this flat tread De Luxe is made for a 5" rim and is an outstanding performer for all the smaller engined trucks.

Made in the following sizes:

10 Ply 32 x 6
10 Ply 36 x 6
Also 10 Ply 32 x 6
for 5" rims

FOR years this Flat Tread De Luxe Heavy Duty LEE has not been equalled for rugged wear and dependability. It is designed for real heavy duty service on trucks and busses where constant speeds of not more than 25 miles an hour are maintained.

Our own method of building in the twin beads insures extra safety.

Made in the following sizes:

12 Ply 34 x 7	14 Ply 36 x 8
12 Ply 38 x 7	14 Ply 40 x 8

FOR those trucks and busses equipped with 5" rims, this specially made LEE far excels the usual tire recommended for such purposes. Made of exactly the same material and processed as the larger tires to the left. It has a special tread design to meet the peculiar requirements of those trucks equipped with 5" rims. The deep-cut design gives many thousands of miles of non-skid protection. Twin beads give an added factor of safety.

Made only in 8 Ply 32 x 6
(for 5" rims only)

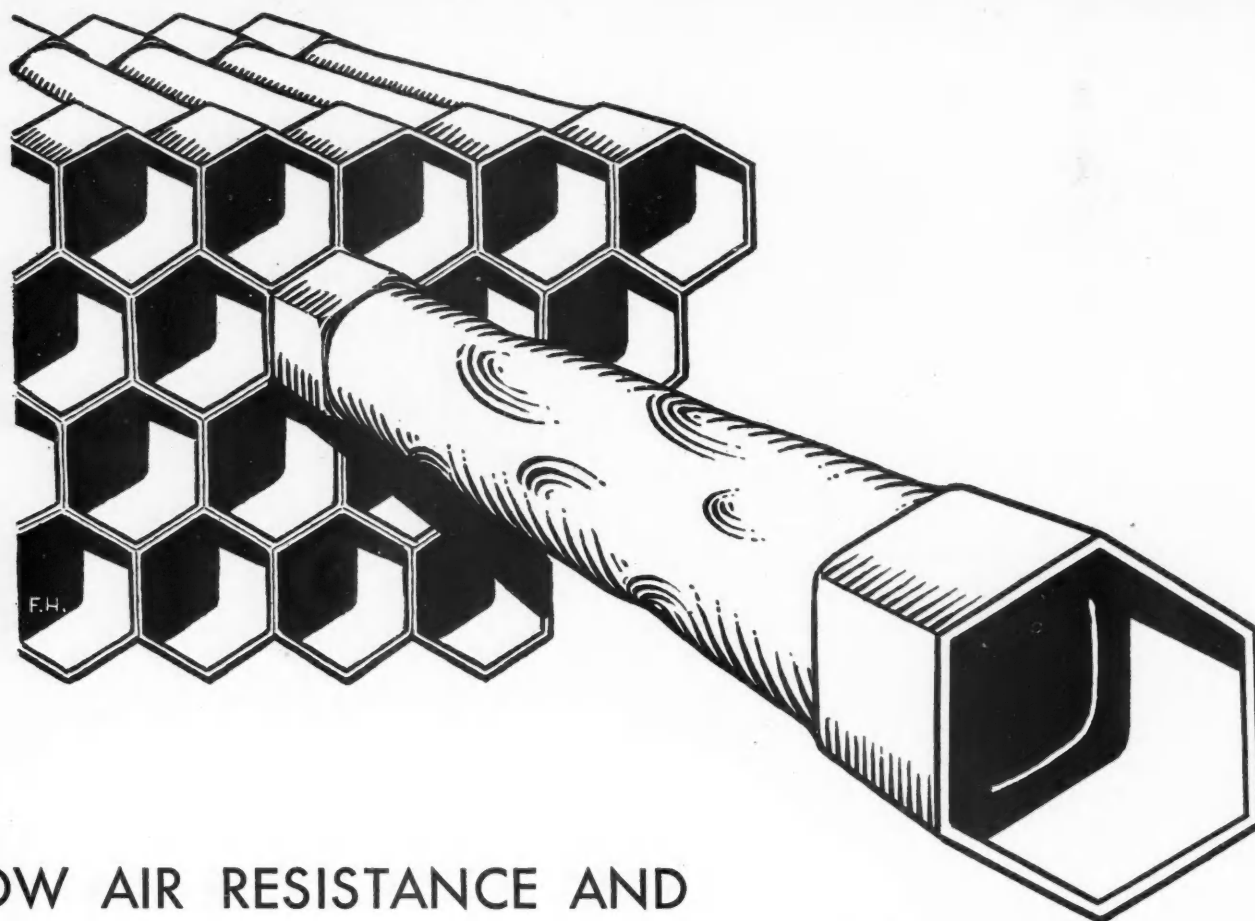
LEE of Conshohocken

GENERAL OFFICES: CONSHOHOCKEN, PA.

Factories: CONSHOHOCKEN, PA. and YOUNGSTOWN, OHIO

*The Commercial Car Journal
and Operation & Maintenance*

August, 1929



LOW AIR RESISTANCE AND ITS IMPORTANCE IN RADIATOR CONSTRUCTION

The more air a radiator passes through its core the more heat it disperses. It is obvious that the less resistance the radiator offers to the passage of air, the more air will pass and the more efficient the radiator will be.

Consider Winchester "Cartridge Core" Radiators with this in mind.

Each copper tube passes air through its center. No obstructions within the tube impede its swift flow. The small bumps produce turbulence which gives a scouring effect to the flowing air, thus improving contact and increasing the effectiveness.

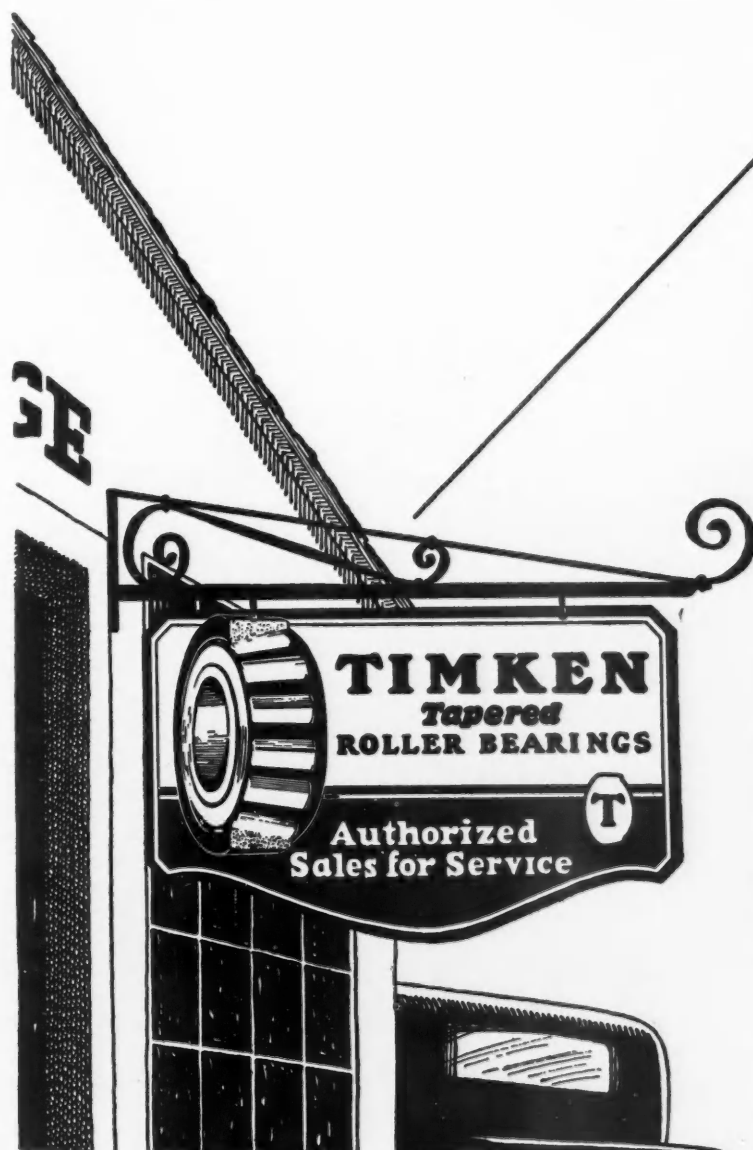
The assembly of tubes arranged in honeycomb formation, forms the radiator core. Of the total face area of the core, 62% is free to the passage of air. This results in extremely high radiating capacity per unit of area, per pound of weight. It means that Winchester "Cartridge Core" Radiators maintain safer motor temperatures and heavy loads without boiling.

Write us for further information about these radiators that are proving so valuable to truck operators.

WINCHESTER "CARTRIDGE CORE" RADIATORS

RADIATOR SALES DIVISION
WINCHESTER REPEATING ARMS CO.
NEW HAVEN, CONN., U. S. A.

Here's Your Source Of Supply For Genuine Timken Bearings



WHEN for any reason a Timken Bearing has to be replaced, the car owner naturally wants it replaced with another genuine Timken.

He rightly believes that the judgment of the car manufacturer in selecting Timkens as original equipment should be upheld when replacements are made—and as a rule he won't be satisfied with anything else.

A nation-wide network of Timken Authorized Distributors supported by a complete factory branch warehouse system enables dealers and repair shops to obtain the correct size and type of bearing for any make and model of car promptly.

You don't have to keep a stock. Jobbers displaying the Timken Authorized Distributor Sign do it for you. Wherever you are, there is one at the other end of your telephone.

THE TIMKEN ROLLER BEARING
SERVICE AND SALES COMPANY
C A N T O N , O H I O

TIMKEN *Tapered Roller* BEARINGS

Use the Commercial Car Journal and Operation & Maintenance Standard Cost System

IT will enable you to get accurate information concerning the operation of your trucks.

It will give you a thorough check-up on your drivers and show who among them are careless or inefficient.

It will show whether or not you are getting the service from your trucks which you have a right to expect.

It will help you ascertain just how profitable is your truck installation.

There is nothing complicated or difficult about the Commercial Car Journal and Operation & Maintenance Standard Cost System. On the contrary, it is very simple. There are but two forms to be used—a driver's daily route card and a monthly summary sheet. The information recorded on them tells you what you need to know about the operation of your trucks.

The complete system
consists of

{ 500 Driver's Cards
60 Monthly Summary Sheets
1 Complete Instruction Book
1 Binder

The Price is only \$950

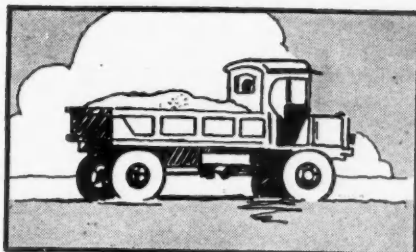
Sample forms and details sent on request. Address:

Chilton Class Journal Company
Chestnut and 56th Streets Philadelphia



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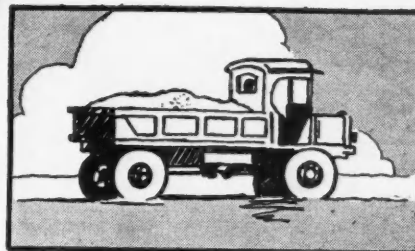
WHICH? PAYS?



TRUCK NO. 1

NOT EQUIPPED WITH SAFE-T-SPRINGS

1. No protection to load
2. Danger of overloading
3. Danger of broken springs
4. Side sway injury to load
5. Nothing to take up jars and jolts.



TRUCK NO. 2

EQUIPPED WITH SAFE-T-SPRINGS

1. Fully protects load
2. Enables carrying extra ton without overloading
3. Saves Springs
4. Saves Driver
5. Makes one trip instead of two.



INCREASES/ PROFITS!

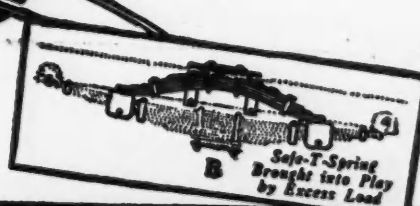
THERE is no question about the value of SAFE-T-SPRINGS. Facts prove that they actually pay for themselves in less than a month. No truck should be without them. No truck or fleet owner will be without them when he sees their wonderful work.



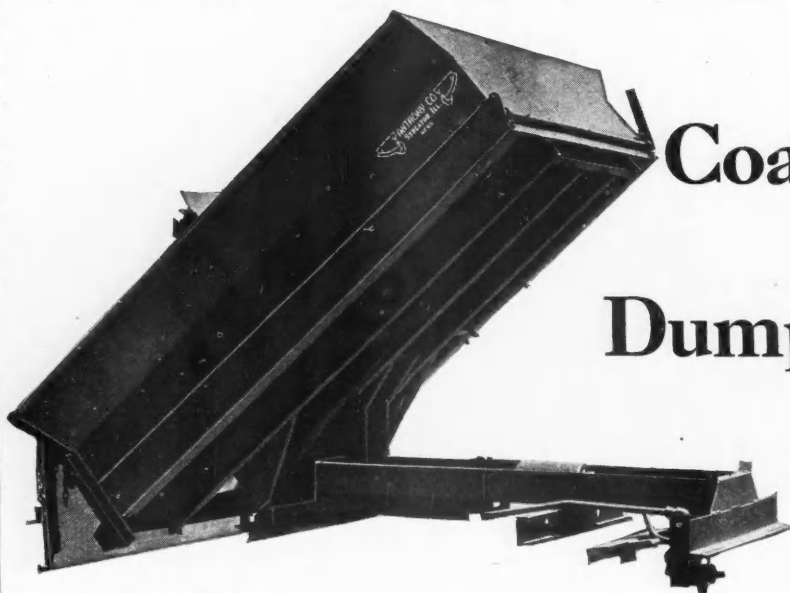
CUTS/ COSTS!

SEND today for facts and figures that will open up the eyes of every truck and fleet owner in your community. Here is new and profitable business that you can get right now. Send today for details.

HOW IT WORKS



TRAINOR NATIONAL SPRING CO. ••• NEWCASTLE, IND.



POWER HOIST
HYDRAULIC
HAND HOIST
STATIONARY

Coal buying time is Dump Body Time

COAL DEALERS ARE
NOW LOOKING OVER
THEIR EQUIPMENT,
PREPARING FOR THE
WINTER IN ANTICI-
PATION OF THEIR
HAULING NEEDS.

Anthony Coal Bodies offer a price range to meet all hauling requirements. Two-ton coal or coke capacities with double acting chute gates, standard equipment. Steel extension sides and swinging center partitions furnished at slight additional cost.

Your body distributor carries
the full Anthony Line



ANTHONY COMPANY INC.

STREATOR, ILLINOIS



Write for special
body catalog



THE ONLY MAIN-
BEARING REAMER
MANUFACTURED
UNDER MARTELL
PATENTS...

"They get our equipment back on the road quicker---"

says one fleet owner. Another adds: "I believe . . . (all things considered) that our Taft-Peirce Connecting Rod Boring Tool has saved us the most money and eliminated our most serious troubles. We are able to fit a bearing in less than 75% of the time with this Tool as against any other method and get at least a 90% perfect bearing fit against a 60% fit, thereby maintaining a better oil pressure and longer bearing life."

Let us show you how to ream bearings more accurately, faster and with factory precision. Ask for booklet.

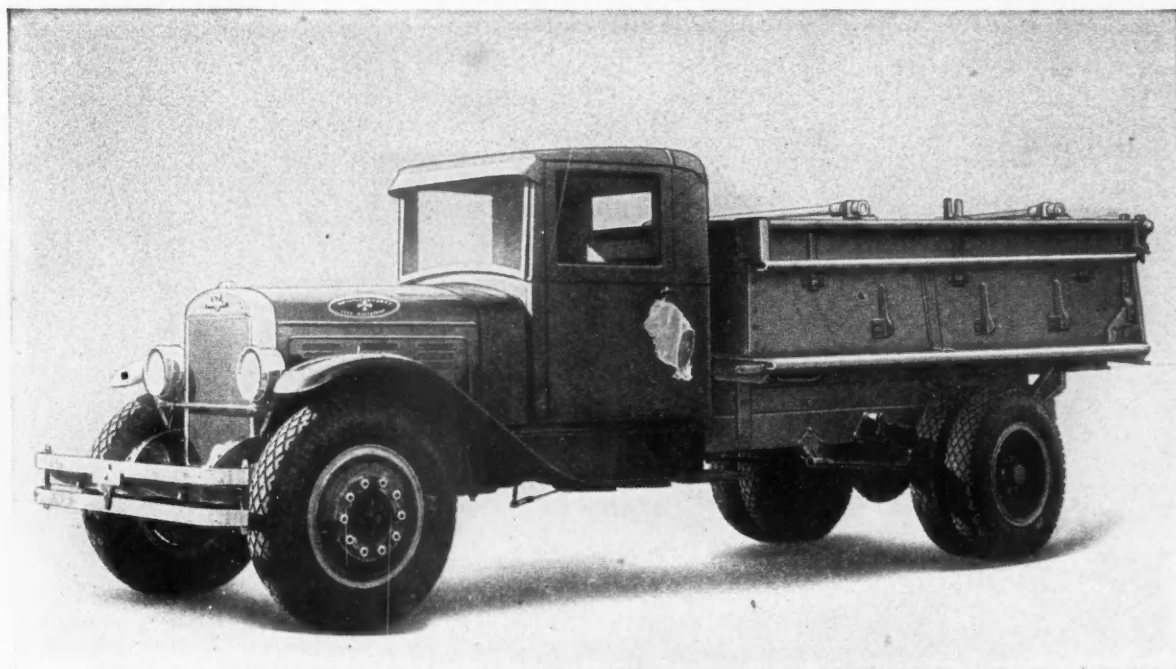
The Taft-Peirce Manufacturing Company

WOONSOCKET  RHODE ISLAND, U.S.A.



Taft-Peirce SERVICE REAMER

There's an outfit just suited
to your needs



SCHACHT Series 40 Dump Truck—Chassis Weight 6100 lbs., Maximum Allowable Gross Weight 19,235 lbs.

SCHACHT Offers every sales advantage

SCHACHT Trucks, long noted for dependability and economy, are now equally outstanding in appearance and advanced design.

With the complete line of SCHACHT Trucks, you can meet the special requirements of

Why Schacht Dealers make greater profits

A complete line of modern trucks, 1½ to 7½ tons.

Every model powered with 6-cylinder truck engine.

30 optional wheel bases included in the different models—no extra cost for long wheel bases. Made by a pioneer of the industry.

SCHACHT reputation for Quality.

SCHACHT reputation for Economy.

Added smartness of appearance and advanced engineering features, reflecting the most modern trends in the industry.

Liberal dealer discounts and terms.

Strong merchandising cooperation.

any buyer — can prove by a comparison of performance, of appearance, of specifications, that you offer him today's most profitable truck investment.

Your territory may still be open. Write or wire for complete information.

The LeBlond-Schacht Truck Company

Factories and General Offices, Cincinnati, Ohio

SCHACHT TRUCKS

Pickwick uses 800

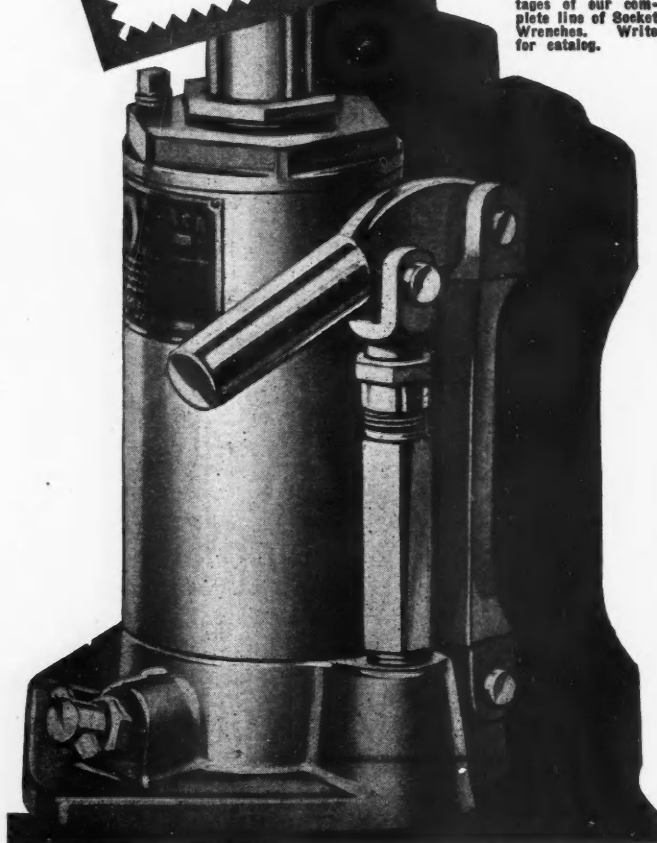
**Standard on
MACK and BROCKWAY**

These three big manufacturers—and plenty of others—have no jack problem. It vanished the day they replaced the old style back-breakers with Blackhawk HYDRAULIC Jacks—the modern standard for bus and truck use, because they save time, save energy, save money, save repairs and replacements—in short, because they are better. Hydraulic Jacks stand up on the job, and so does the driver—at ease, as he conveniently places the jack, quickly lifts the load by mere finger pressure, or lets it ease down automatically. That's hydraulic jacking as perfected by Blackhawk.

We make jacks to fit every bus or truck need. Write for catalog and prices.

BLACKHAWK MFG. COMPANY
Dept. CO Milwaukee, Wis.

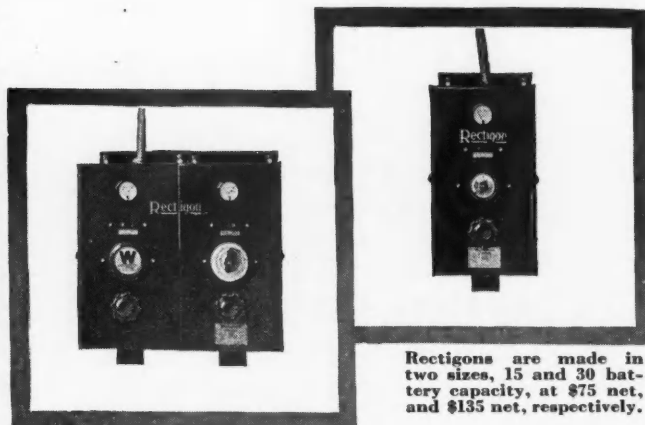
You will also appreciate the advantages of our complete line of Socket Wrenches. Write for catalog.



BLACKHAWK JACKS

HYDRAULIC
OIL-POWER

August, 1929



Rectigons are made in two sizes, 15 and 30 battery capacity, at \$75 net, and \$135 net, respectively.

More power reaches the battery

In the Rectigon, a greater percentage of the power that comes off the line is stored in the battery than with any other type of charging equipment. That is true when the Rectigon is new. It is true in greater degree as you add month after month, year after year, to its service.

There are no parts to wear, nothing to get out of adjustment. Its efficiency remains at the same high level throughout its long life.

The Rectigon does not impose unexpected upkeep charges. Only the inexpensive bulb needs to be replaced, at long intervals. Its cost is distributed over many hours of service. Its guaranteed life is long, and users everywhere find that its actual life exceeds the guarantee by two, three and four times.

Look to the Rectigon for battery charging economy—low first cost—low upkeep cost, high efficiency. Write for a copy of the booklet, "More Power to the Battery."

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.
Merchandising Department East Pittsburgh, Pa.



Westinghouse

Use only genuine Westinghouse
Bulbs for replacements.

each battery



charged with this

rectigon



and

this bulb



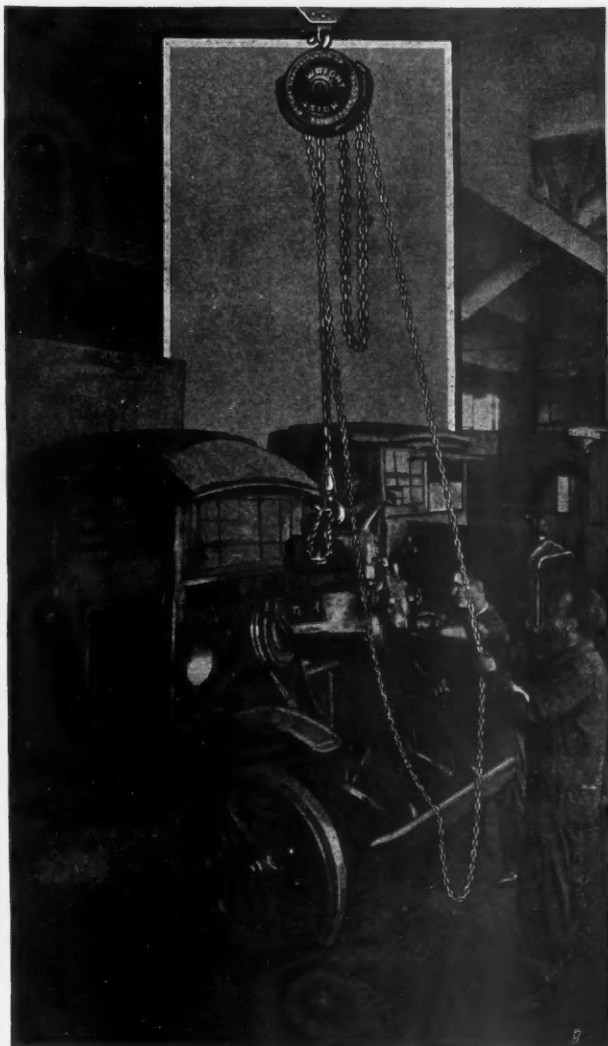
gives

you . . a lower
charging cost

The Commercial Car Journal
and Operation & Maintenance

WRIGHT

HIGH SPEED CHAIN HOIST



**SPEED
EASE OF OPERATION
STRENGTH-DURABILITY**



FOR LIGHT LOADS AND
EXTREME PORTABILITY USE

WRIGHT

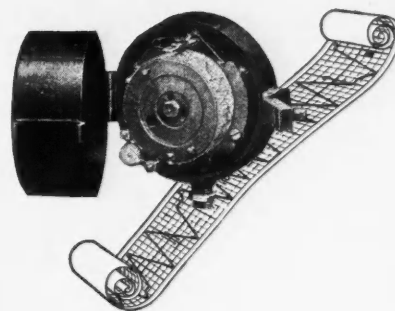
DIFFERENTIAL HOIST

WRIGHT MANUFACTURING CO.
BRIDGEPORT, CONN.



*The Commercial Car Journal
and Operation & Maintenance*

The Recordograf Record reveals Hidden Profits



THE graphic record produced by the OHMER Recordograf reveals the hidden profits in your business. It supplies the information you need to cut operating costs . . . to save money on gas, oil and repairs . . . to route your fleet to the best advantage.

Send for the record of a test trip between Dayton and Cincinnati. Each line is carefully analyzed and explained. The stops which can and cannot be accounted for . . . the time lost in starting . . . and other profitable information are graphically portrayed.

Mail the coupon for this interesting chart and full information about the Recordograf. Learn how it will pay for itself in a few weeks and then pay a big extra profit. There's no obligation involved. But send in the coupon *today*.

Other OHMER Products

The Odometer and Hub-Odometer, two famous OHMER Meters for recording mileage only. Cash Registers, Ticket Printing Registers and Fare Registers. Ticket Printing and Non-Printing Taximeters. Four styles of Fare Boxes. Industrial Counters for all purposes.

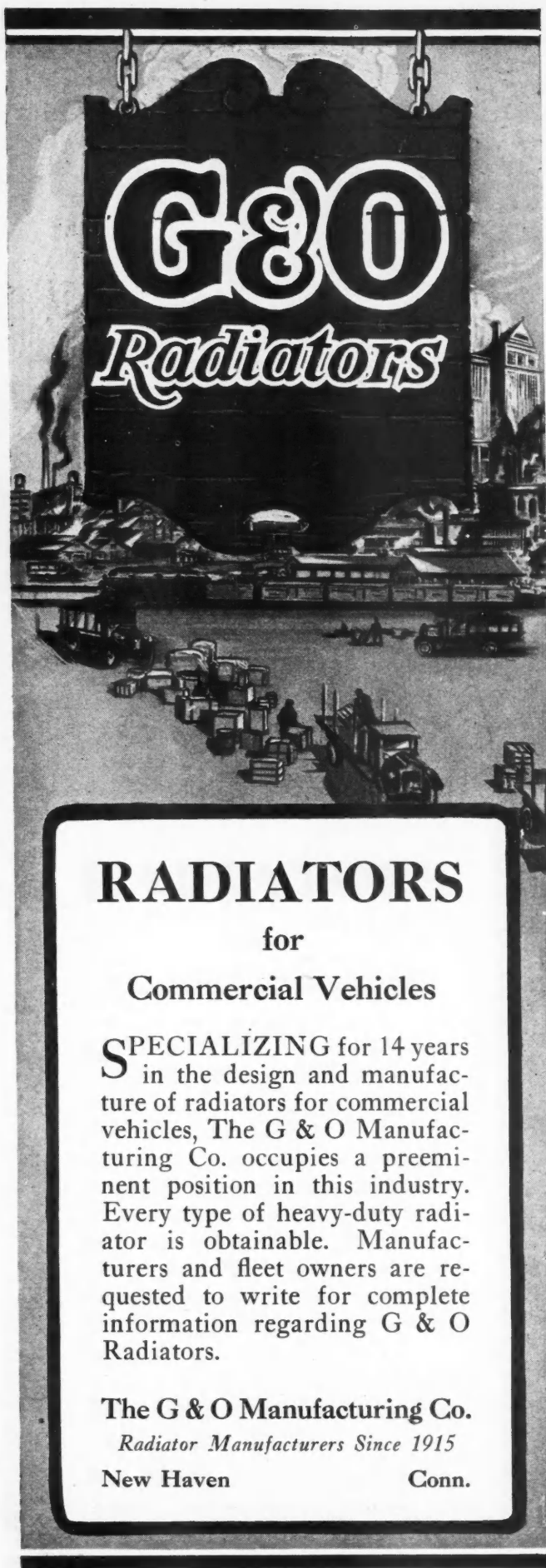
OHMER

REG. U.S. PAT. OFF. AND OTHER COUNTRIES
FARE REGISTER COMPANY
Dayton, Ohio, U. S. A.

Send me a copy of the test Chart and further information about the Recordograf.
Name
Address

Pin this to your letterhead

August, 1929



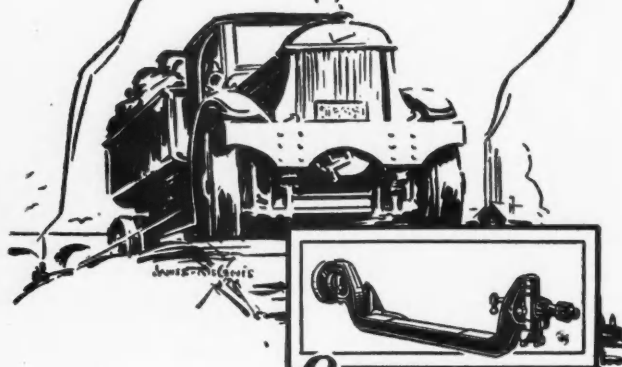
G&O
Radiators

RADIATORS
for
Commercial Vehicles

SPECIALIZING for 14 years in the design and manufacture of radiators for commercial vehicles, The G & O Manufacturing Co. occupies a preeminent position in this industry. Every type of heavy-duty radiator is obtainable. Manufacturers and fleet owners are requested to write for complete information regarding G & O Radiators.

The G & O Manufacturing Co.
Radiator Manufacturers Since 1915
New Haven Conn.

August, 1929

SHULER**FRONT
AXLES***for* **TRUCKS****Tractors and Trailers**

FRONT and REAR AXLES

There are worm gear, bevel gear and double reduction gear types of rear axles, all manufactured by reputable companies to meet the various conditions for which a particular type of final drive is most suited.

Regardless of the type or make of rear axle, the front axle must give 100% service; that is why the largest truck manufacturers use SHULER—thereby insuring a good axle combination.

FRONT AXLES ONLY

SHULER AXLE CO.
INCORPORATED
LOUISVILLE KENTUCKY

*The Commercial Car Journal
and Operation & Maintenance*

Dixon's 677



Fights the Strains of City Traffic

The constant start . . . stop . . . necessitated by jammed city traffic give the differentials and transmissions of heavy duty vehicles a terrific beating. These heavy duty parts need Dixon's double film of protection. All year round it will fight the wear and shock that attack these vital parts. Pure flake graphite and grease—two lubricants in one—to ward off gear troubles.

And Dixon's stays on its job. It never runs in summer. It won't stiffen or channel in winter. It constantly lubricates regardless of weather or traffic conditions.

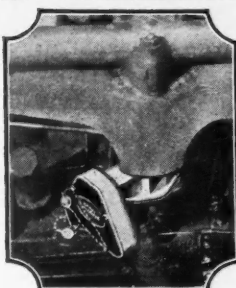
In the differentials and transmissions of your trucks Dixon's 677 will prove its efficiency. Give it a trial. Circular 112-G tells about the profits made through our dealer plan. Send for a copy. Joseph Dixon Crucible Co., Jersey City, N. J.

DIXON'S 677

Graphited Grease

Governor Builder to the Truck Industry

HANDY GOVERNORS



From the light delivery vehicle to the heaviest truck that travels the highways, there is no essential difference in the huge benefits which each derives from government

—automatic protection against over-speeding.

They all need it. Handy provides it.

So long, and so intimate, has been the Handy service as governor builder to the truck industry that current Handy models today cover the whole field.

The fleet boss may operate a wide variety of trucks, but there's a Handy model for every one of them—each tried and proved to the full satisfaction of the truck's manufacturer.

Here is the reason why practically all national fleets standardize on Handy—why the very mention of Handy to any haulage executive evokes instant and unquestioning approval.

Your nearby Handy distributor has all current models in stock. Call him for information and prompt, intelligent service.

"It pays to Govern with Handy."

HANDY GOVERNOR CORPORATION
3929 WEST FORT STREET DETROIT, MICHIGAN





*One of the White Company's New
Models Equipped with RAIN
OR SHINE Protection*

Recommend RAIN OR SHINE Truck Cabs for more profit and greater buyer satisfaction. A user—"sold" on your line, means a resale, sooner or later. Keep them "sold" with RAIN OR SHINE CABS.

Drivers Can Make or Break a Truck

Truck performance depends on the driver. A tired, dissatisfied operator doesn't produce as much as the man who has comfort and protection against storm, heat and cold. RAIN OR SHINE TRUCK CABS relieve hard driving strain . . . add passenger car comfort to every truck. Three models—Coupe, Sliding Door and Dump Truck Special. Write for details.

The General Woodwork Corporation
1225-1255 Budd Street Cincinnati, Ohio



RAIN OR SHINE TRUCK CABS



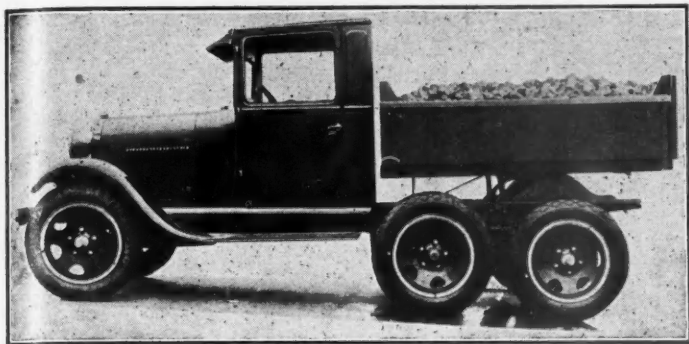
Commercial Car Journal and Operation & Maintenance Truck and Bus Specifications ARE CORRECTED MONTHLY

You can depend on the information they contain as being accurate and up-to-the-minute. Use them to sell and use them to service.



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United Business Publishers, Inc.

4 WHEEL DRIVE FOR FORD AA TRUCKS



DUAL Duty Four Wheel Drive Unit when attached to a Ford AA Truck, converts it into a powerful economical tractor or dump type for construction, road and other heavy duty work. The Dual Duty Unit can be had either with chain or gear drive.

Dual Duty Four Wheel Drive increases tire mileage, carrying capacity, relieves strain on driving parts, spreads the load over four tires and two axles, increases traction and doubles the earning power of a light truck.

No supplementary Frame, no change in hookup on Ford Driving Axle, chassis is not changed or molested in any way—easily installed and easily removed.

Manufactured by Dual Duty Company, makers of Dual Duty Units for Ford & Chevrolet trucks.

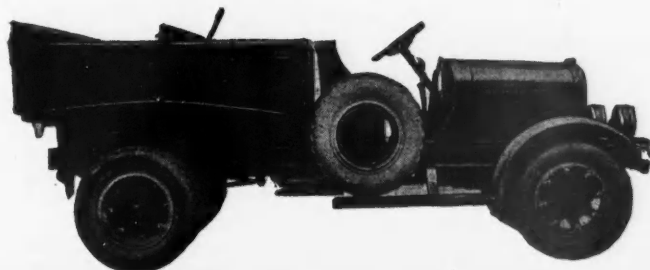
DUAL DUTY

DUAL DUTY COMPANY, ALMA, MICHIGAN, U.S.A.

OMORT

|| ALL PURPOSE DUMP TRUCK & ROAD BUILDER ||

Power to meet every demand of material transportation—endurance to withstand the inevitable wear and tear of dump truck service—speed in carrying its load and in unloading—utility that answers every desire of the owner—these are the features that are establishing the OMORT as the outstanding dump truck in the dump truck field. For franchise address The Greenville Mfg. Works (Division of the American Aggregates Corp.), Greenville, Ohio.



The Commercial Car Journal
and Operation & Maintenance

PERFECTION



The Name That Sells Dump Bodies

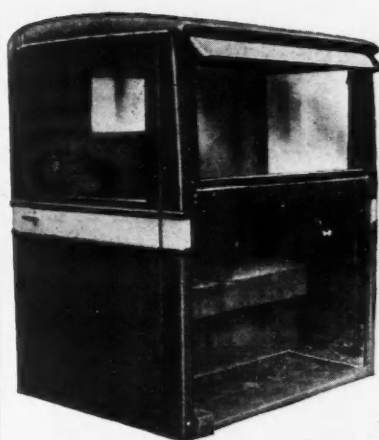
COAL DEALERS will appreciate the convenience and sturdy durability of Perfection Model 18—Two and Three Ton Hand Underhoist Coal Bodies.

Built of heavy blue annealed steel—firmly braced—arc welded—low for easy loading—ample clearance in dumping position—double-acting, coal-chute tailgate—center partition.

Equipped with the powerful Perfection Hand Underhoist—with correctly balanced gear ratio of 101 to 1. Designed with the Coal Dealer's needs in mind. Write for complete information.

THE PERFECTION STEEL BODY CO.
Dept. C.C.J. Galion, Ohio U. S. A.

Announcing



"THE ULTRA"



Distinguished for its fine appearance and quality—emphasizing again the leadership of Weatherproof which for 20 years has been the dominant influence in the cab industry. The New ULTRA Cab has "finished lines" that have hitherto only been given passenger cars.

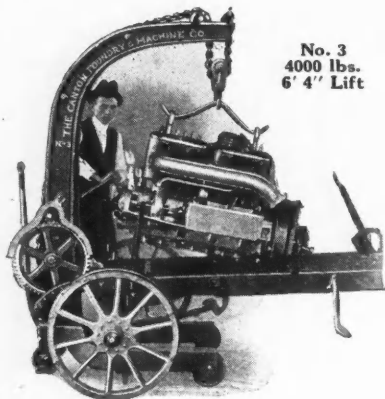
The ULTRA is built in sizes to fit any standard truck chassis with or without cowl. Send for complete specifications, prices and local distributor's name.

Weatherproof

Weatherproof Body Corporation
438 Shiawassee St., Corunna, Michigan

August, 1929

A Canton Portable Safely Supports the Heaviest Motor or Chassis Parts



Engine or rear end — they all look alike to a Canton. It not only lifts these heavy parts safely but supports them at any height convenient for your men. It's port-

able. It's fool-proof. Made in 15 other sizes. Sold on partial payment plan. Catalog sent on request.

The CANTON FOUNDRY & MACHINE CO.
CANTON OHIO

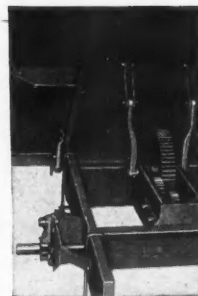
Manufacturers of Universal
Auto Turntable
and Canton All Steel
Alligator Shears

NEW YORK OFFICE

101 W. 31st St.

CLEAN CUT

No Ragged Edges
Attractive
Durable



This view of the underbody and hoist construction of Marion dump bodies shows there are no rough edges on them. They are attractive.

Look at the construction! Notice the heavy lifting arms—enclosed hoist gear box—safety ratchet pawl—wide hard wood sill mounting—double center floor panel. All of these are exclusive with Marion.

That's why a Marion will out-last and out-perform any dump body on the road.

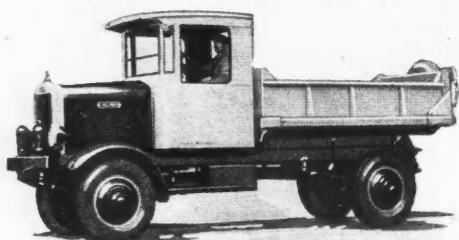
THE MARION STEEL BODY CO.

MARION, OHIO, U. S. A.

THE STEEL TROUGH AND MACHINE COMPANY, LTD.
TWEED, ONTARIO — CANADIAN MANUFACTURERS

MARION

Speedy! and they sell!!



If performance counts then the FREEMAN is the greatest truck in the world This 4-yard dump truck like other Freeman models has proved its ability to conquer all weather and operating conditions FOUR WHEEL DRIVE and positive traction on all four wheels, FREEMAN trucks pull out the "mud bounds" and guarantee continuous performance Write the factory today for your franchise.

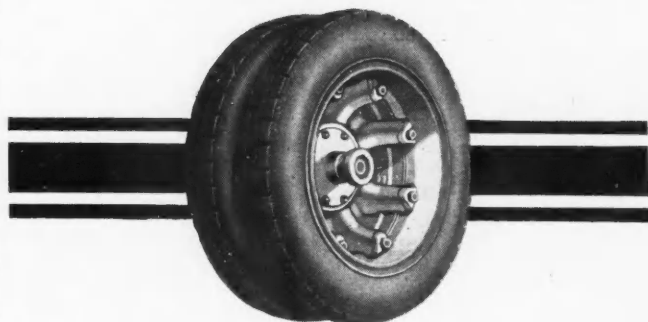
FREEMAN MOTOR CO.

Detroit

Michigan

4 FREEMAN WHEEL DRIVE DUMP TRUCKS

August, 1929



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the pioneer spoke type "duals"

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Dept. C., Automotive Wheel Division

Erie, Penna., U.S.A.

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MALLEABLE WHEELS

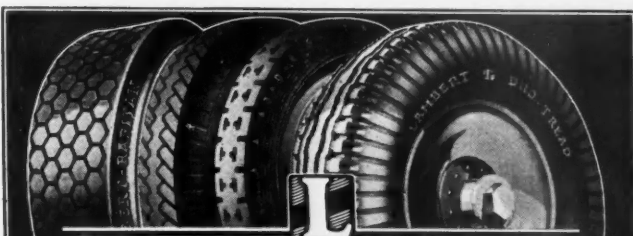
"THE WHEEL OF TODAY—AND TOMORROW"

The Commercial Car Journal
and Operation & Maintenance

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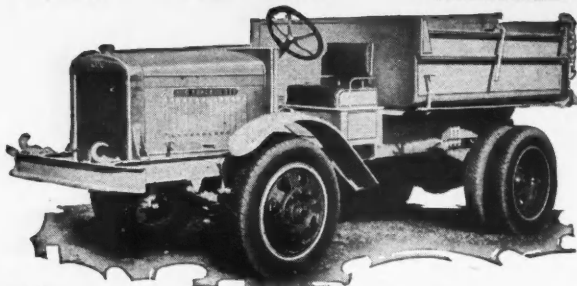
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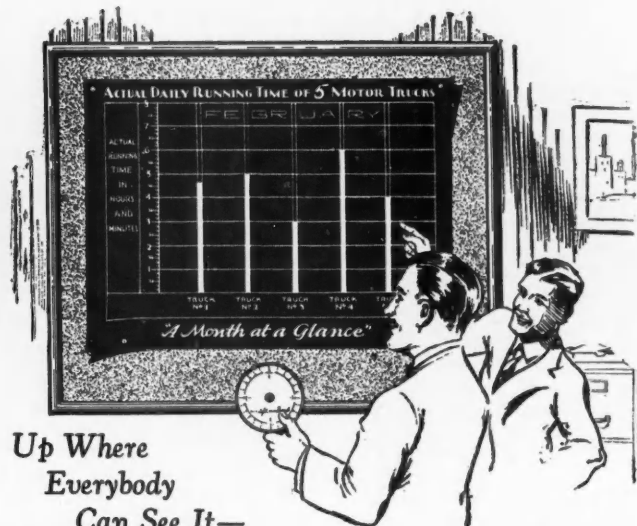
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THE HUG CO., Highland, Ill.



Up Where
Everybody

Can See It—

The Work of 5 Trucks for a Month!

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If a certain truck runs only 3 hours on Thursday while another truck runs 5 hours on the same day, there may be all sorts of good reasons for it.

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And that's why this kind of chart means so much. It's the final court of appeal. And it's as perfect a picture of your fleet of trucks as you could possibly want.

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80 ton 42 inches wide—50 ton 36 inches wide



Shops servicing trucks and buses will find dozens of uses for a Weaver Hydraulic Press.

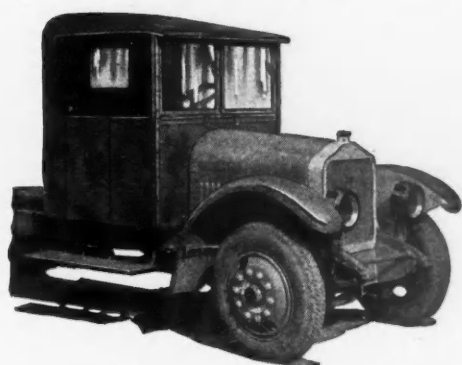
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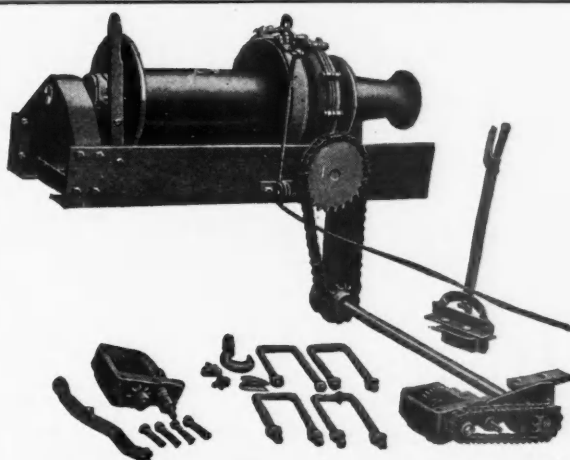


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Specify them on your new trucks. Made in four styles to fit every make and size of trucks and type of service. See the Highland distributor near you or write for full information direct.

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Kingham winches are made very simple in design yet sturdy enough to stand the rough treatment of everyday usage. They are very desirable for any haulage job within their capacity as shown and can be furnished for mounting either on the truck

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without
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chassis only or truck with platform body. Their Maximum Service, High Quality and Low Price have increased their rapid strides toward popularity. Kentucky winches are made in three sizes. Write for new catalogue on Winches and Trailers.

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COST
CONTROL

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Record the mileage by which to measure the performance of your trucks; the efficiency of your drivers. Show your costs-per-mile for supplies and maintenance; give you control of operating-cost by a quick check on wasteful operating. Regular model, adaptable to all standard trucks, \$20 list. For Model A FORDS, complete with threaded hub for attaching, \$21. Ask for informative circulars.

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Le Blond-Schacht

ON THE new Le Blond-Schacht, a product of scrupulous detail, manufactured by a most responsible people dating back to the early days of the industry, the radiator is designed and constructed by Young. With stamped one piece chromium plated steel shell this radiator is a "real job" in appearance as well as efficiency. Put the breath of life in your "front end" by designing it right—It will be well done by Young Engineers.

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Manufacturers of Scientifically Heat Treated Automobile Springs

Super-Service Sixes DAY-ELDER

A Model for Every
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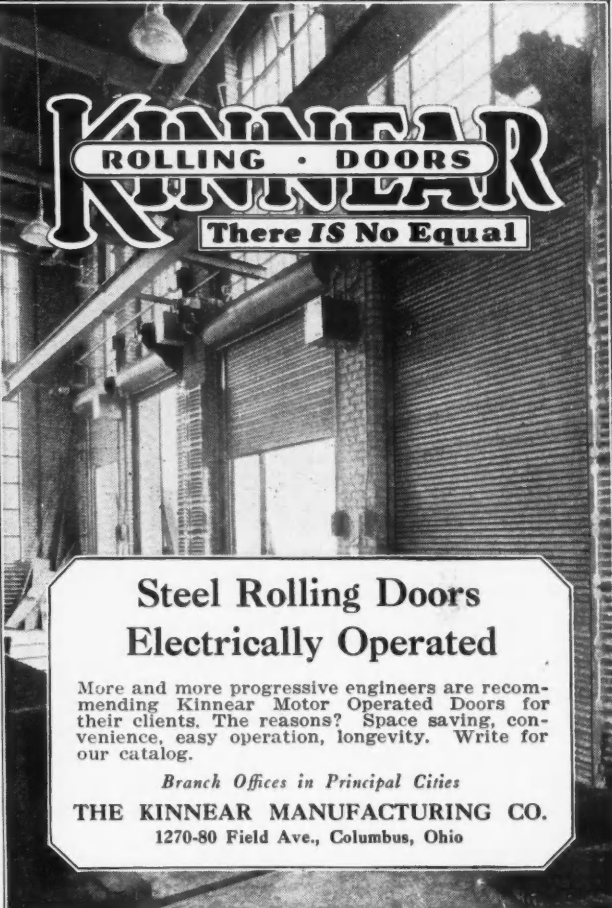
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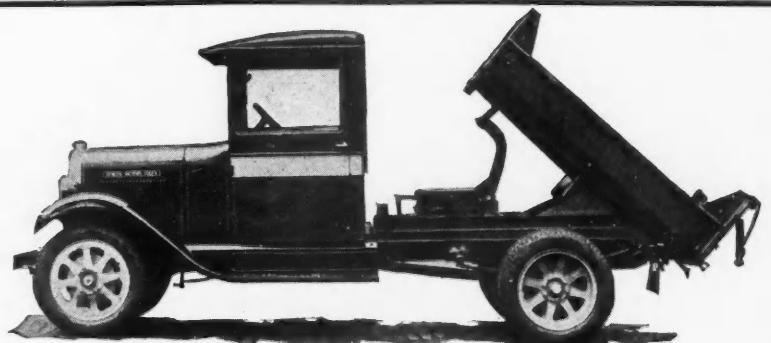
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DUMP BODY

for all trucks

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*New in Principle
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*Powerful in Operation
Smooth Performance*

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ALLEGAN, MICH.

The universals on a Blood shaft need hardly half the attention other joints do, and years will necessitate the replacement of but a few simple parts.

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HOOPE'S

WOOD SPOKE METAL FELLOE
WHEELS

For Use with Single and Dual Solid Tires



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HUB INTEGRAL MALLEABLE
WHEELS

For Use with Single and Dual Pneumatic Tires

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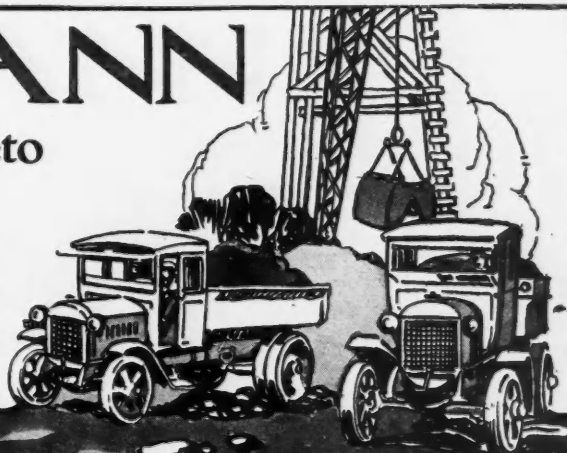
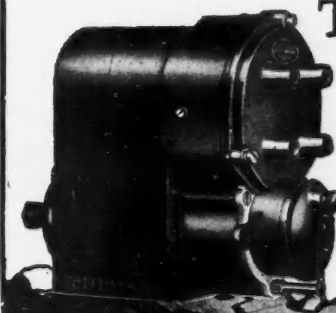
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A REASON

There is a practical and fundamental reason for the dominance of Zenith carburetors in the truck, bus and industrial fields.

Not only is the Zenith principle of carburetion time tested and proved, but Zenith carburetors are designed and constructed to meet the needs of heavy-duty service under every kind of working condition.

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Zenith Fuel Filters designed and built to the same standards, are available for heavy-duty service. Your inquiry is invited.

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Manufacturers of Zenith Carburetors and Filters

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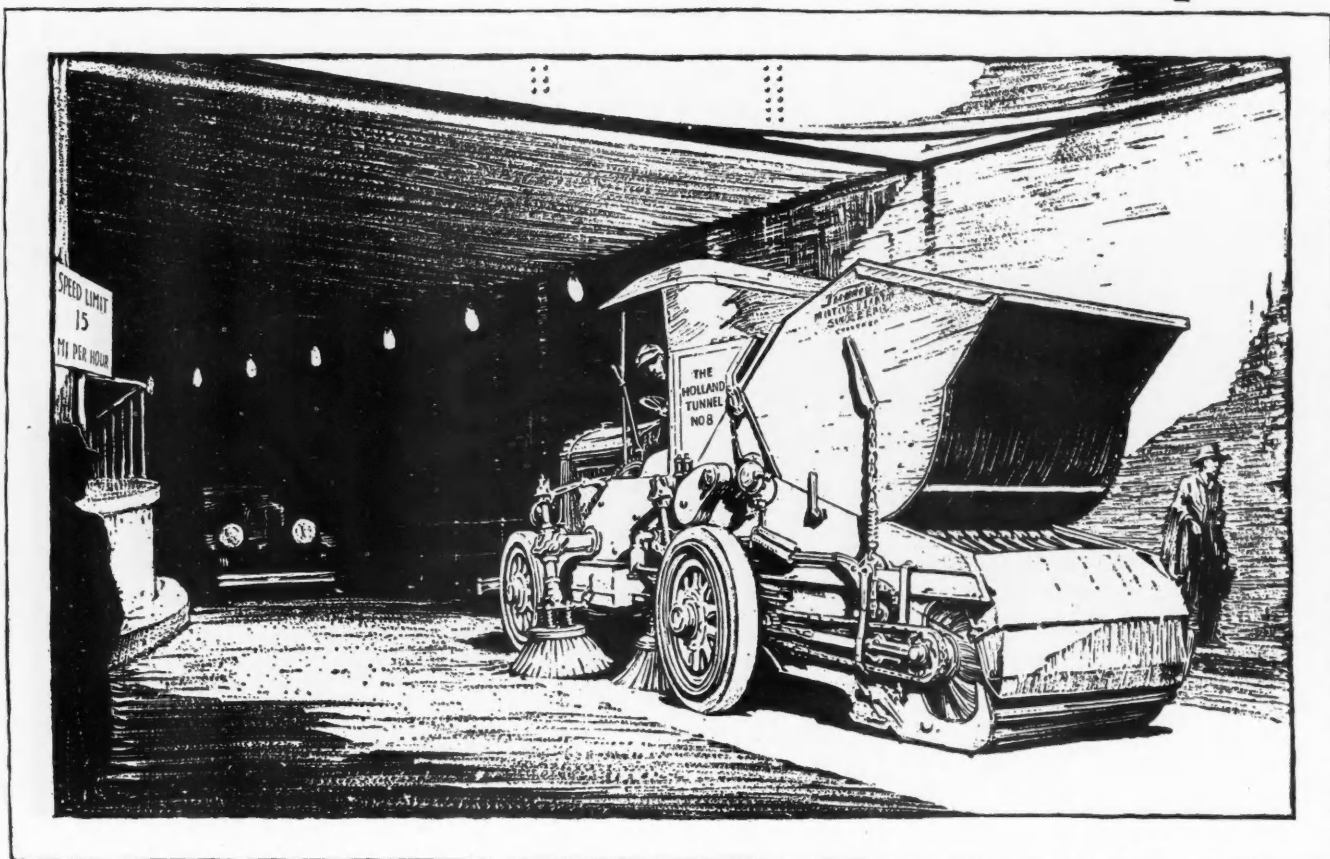
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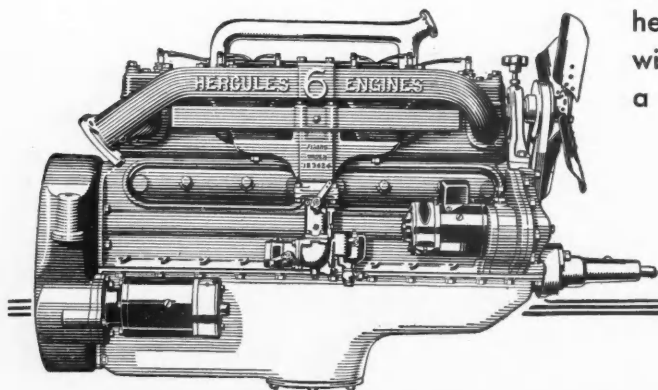
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Cleaning the Holland Tunnel With Hercules Powered Sweepers



WITH tens of thousands of cars each day tracking tons of dirt and mud into the Holland Tunnel, Hercules-Powered Sweepers accomplish a gigantic task in cleansing the twin thoroughfare under the Hudson. Under the hood of each machine a sturdy, reliable Hercules Engine furnishes power both for driving the truck and operating the brooms.

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CANTON, OHIO, U. S. A.

West Coast Branch: Los Angeles, California
Mid-Continent Branch: Tulsa, Oklahoma

HERCULES ENGINES

August, 1929

*The Commercial Car Journal
and Operation & Maintenance*

Spoksteel

by
Motor
Wheel

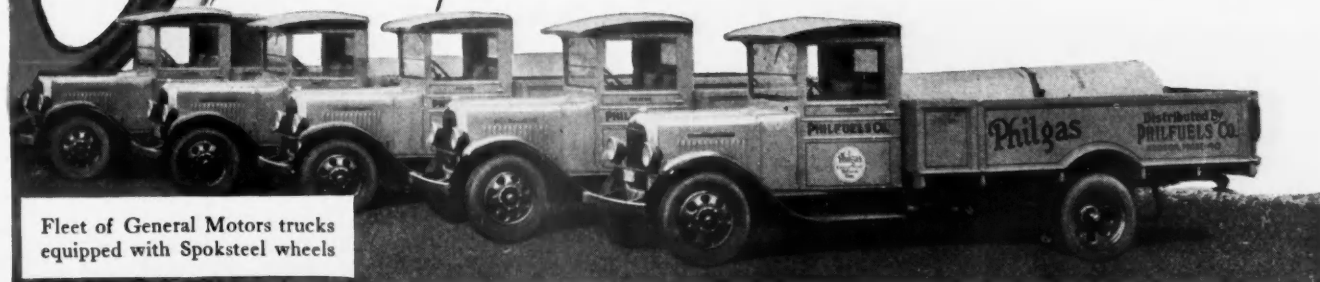


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These are the features of special suitability: one-piece spider forged from high-carbon steel; radial load transmitted by direct contact of wheel and hub; positive mounting; fan action of spokes for cooling.

In fleets and single installations Spoksteel wheels have demonstrated their special fitness to serve. Send for full particulars.

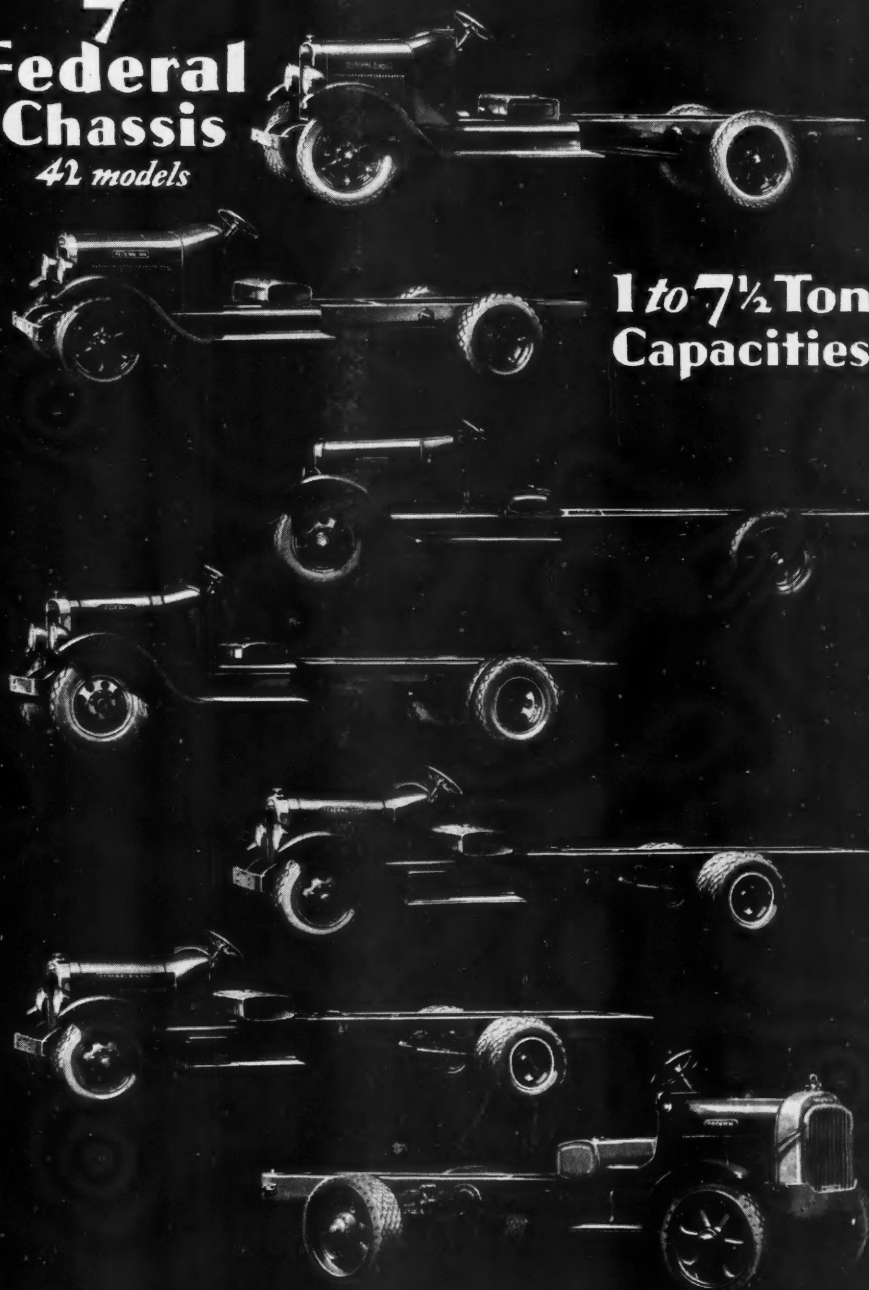
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Fleet of General Motors trucks
equipped with Spoksteel wheels

"Mighty Profitable!"

**7
Federal
Chassis**
42 models



**1 to 7½ Ton
Capacities**

Say FEDERAL DEALERS

Read Their Letters

Federal dealers are making money. Witness these letters, telling the stories of big successes that have grown from modest beginnings. Read what these Federal dealers say. And read between the lines.

Federal is enlarging its dealer line-up. There are Federal franchises open in various parts of the country. One of these opportunities may be in your territory or in some territory in which you would like to locate. Your correspondence—confidential, of course—is invited.

Greater Profits in Selling 26 Federals than 925 Pleasure Cars

"We are giving you the total sales made by our company of pleasure cars sold and trucks sold.

"Our sales of passenger cars for one year totaled 925. The net profit after deducting losses on used cars was \$12,588.16. The total sales of new Federal Trucks were 26. The profit on same was \$15,456.48."

(Dealer's name on request)

\$19,000 Profits in a Year on \$1,400

"We started in business on January 7, in a very small way, having an operating capital of \$1,400 the date of our opening. After closing the books at the end of the year, we had realized a net profit of over \$19,000.

"There are many fine things that we can say about Federal. They have been royal to us in every way. The fair dealing we have had from every department has given us a world of confidence in the line."

(Dealer's name on request)

Prefers Selling Federals

"In 1923 I took on Federal. I am completely satisfied that there is no better truck product in the industry, regardless of price. Each year my sales have advanced and, while selling only about one-third as many trucks as automobiles, my profits are, however, greater. If all passenger car dealers would investigate further, there would be more of them linking into this lucrative field."

(Dealer's name on request)

15 Years a Federal Distributor

"For the past fifteen years we have been a Federal Motor Truck Distributor. Starting with a small original investment in the Federal Truck line, we have built up a truck business in this limited populated territory of \$150,000 annually."

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\$4,000 Capital Earns \$48,000 Profits

"Took Federal franchise three years ago. Approximate capital \$4,000. Net profit in period of three years, approximately \$48,000.

"Personally, I feel that the Federal line rates as one of the best in the industry."

(Dealer's name on request)

From \$4,028.23 to \$96,896.37 Profits a Year in Six Years!

"The following is a record of net profits for each user since we have had the Federal Franchise:

1st year...	\$ 4,028.23	4th year...	\$ 9,564.39
2nd year...	8,032.12	5th year...	9,481.80
3rd year...		6th year...	26,033.62
			96,896.37

s name on request)

THE FEDERAL MOTOR TRUCK COMPANY, 5786 FEDERAL AV.

DIT, V. A.

FEDERAL TRUCKS

